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Patent Office Now Says

Software Patent Applications Welcome

WASHINGTON, D.C. — In an unexpected announcement, U.S. Commissioner of Patents William E. Schuyler, Jr., told 400 attendees at the second annual Law of Software Conference in Washington last week that the Patent Office "will now consider patent applications for computer programs on the basis of the merits of the specific inventions sought to be protected."

This was a sharp reversal from the previous guidelines issued by the Patent Office which, in Schuyler's own words, "discouraged the filing of applications on computer programs."

In making the announcement, Schuyler gave an unexpectedly favorable response to the plea of Virgil B. Woodcock, the lawyer who represented Prater & Wei in the well-publicized case which indicated programs might be patentable [CW, Aug. 20]. Woodcock had ended his discussion of that case at the conference by arguing that it was not "in the public interest for the Patent Office to continue its adamant position on patentability in this field and to require a multiplicity of appeals before liberalizing the guidelines."

Schuyler also called for a new way of legally protecting software. Other speakers at the conference clearly indicated that current methods are unsatisfactory. Wallace C. Doud, IBM's

director of commercial development, summed it up this way: "Pitting programs into existing copyright or patent systems is like putting square pegs in round holes, and using trade secrets is at best a risky proposition."

Doud explained his company's decision to copyright program products by saying, "Of those systems presently available for protecting intellectual property, it seems to be the only system which can be used from a practical business point of view."

But two speakers indicated little confidence in the IBM has chosen to supplement its contracts.

James W. Falk, patent attorney-director for Bell Telephone Labs, took the position that if a person obtains a copy of a program legally, he can use it to operate a computer without infringing the statutory copyright. Falk also thought a court might find that copying a copyrighted program for use in the copier's computer was not an infringement.

Morton David Goldberg of New York agreed in part with Falk. Goldberg argued that making a copy of the program for sale to a third party would be a clear infringement and that making a copy for one's own use probably would be an infringement.

Goldberg summed up the soft-

ware situation by saying that new laws are needed, and until there are better methods for legal protection of software there will be lots of law suits, which "will be great for the lawyers, but hell on the resources of the country."

David Bender of the Computers-in-Law Institute of George Washington University, the conference sponsor, discussed the use of trade secret protection by contract, and the challenge to this method from a recent U.S. Supreme Court decision.

"Since June 16, 1969 we have

been uncertain whether the law of trade secrets itself still exists for anything which may be a proper subject for patent protection," he said.

Noting that the validity of program patents has not been finally decided by the Supreme Court, he explained the doctrine of Federal Patent Pre-emption — if something can be patented, Congress has decided patent is the only way the inventor can protect it, and any state law to the contrary is invalid. Bender called this policy a dragon whose "mission in life is to devour and

conflagrate any state laws which are unfortunate enough to get in its way." The recent Supreme Court decision has cast some doubt "on the continued validity of trade secret law as we know it today... significant alteration of this law may have enormous economic consequences as a result of lowered commercial morality."

He concluded by pointing out that Congress had enacted the Patent Law, had bills before it to preserve trade secret rights, and by its actions could keep the

(Continued on Page 2)

IRS Says Users May Capitalize Or Expense In-House Software

WASHINGTON, D.C. — The Internal Revenue Service gave most computer users a present last week when it released guidelines for the tax treatment of the cost of developing, buying, or leasing software. The guidelines which are in Revenue Procedure 69-21 and become effective Oct. 27, allow users to either capitalize or expense software development costs.

After defining software to include "all programs or routines used to cause a computer to perform a desired task or set of

tasks, and the documentation required to describe and maintain those programs" IRS said that if the taxpayer was consistent, the cost of developing software for a company's own use or for marketing to others could be treated, at the taxpayer's option, either as an expense or capitalized with the cost amortized over a five-year period (or a shorter period if the developer could satisfy the government that software will be out of date before five years have passed.)

Users of package programs do

not come out quite so well. If the software is not separately priced, it will be treated as part of the hardware cost. If it is separately priced, the buyer must capitalize the cost and amortize that amount under rules like those applied to the developer who capitalizes his development costs. When a user leases software, however, he can expense the rent.

Sheldon S. Cohen, former commissioner of internal revenue, speaking at the software law conference last Thursday, pointed out that the government had issued a revenue procedure which tells what internal revenue agents will accept, rather than a revenue ruling, which is a pronouncement of law. He noted that the procedure becomes effective Oct. 27, and that the Treasury Department is giving taxpayers a short time to review their present methods before being locked in. He predicted that the better treatment for unbundled software will force hardware manufacturers into further separate pricing.

Invasion of Privacy Charged

Traffic Survey 'Tags' 'Straying' Husband

By Joseph Hanlon
CW Staff Writer

WASHINGTON, D.C. — A woman in Maryland recently received a computer-printed letter that said in part: "A car as described below and registered in your name was observed traveling on the Baltimore-Washington Parkway near Laurel, Maryland on Aug. 26 at about 8 a.m. going south." Unfortunately, the car was driven by the woman's husband, who was not supposed to have been on the parkway that morning.

The letter was one of 8,400 sent out to motorists as part of a traffic survey. Photographs were taken of moving cars' license plates and computer-matched against motor vehicle registrations in Maryland, Virginia, and Washington. Computer-printed questionnaires were then sent to each person so identified. The questionnaires asked where the person was going and why, as well as other details.

The survey was conducted by the Metropolitan Washington Council of Governments (Cog) to uncover travel patterns. Normally traffic surveys are conducted by roadside interviews, where cars are stopped and the driver asked the questions. Cog used this technique on other roads leading into Washington, but heavy traffic (60,000 cars per day) prevented it from using roadside interviews on the Baltimore-Washington Parkway. The technique of photographing license plates had been tested by the Bureau of Public Roads in Boston and Kansas, so Cog decided to use that method for the survey.

'Incredible Surveillance'

Rep. Cornelius E. Gallagher (D-N.J.), chairman of the Right to Privacy Inquiry, charged that the survey technique was an unwarranted invasion of privacy and "is indicative of the incredible surveillance

mechanisms provided by the new technology."

But the Cog official in charge of the survey disagreed. Robert T. Dunphy, acting chief director of data collection and analysis of the Department of Transportation Planning of Cog, conceded that the technique was "more of an invasion of privacy than other survey techniques" but he argued: "It's a question of trade-offs. Do you lose more in terms of privacy than you gain in terms of planning for expenditures on public facilities? I personally think that in this case you gain more than you lose."

He also noted that the questionnaire contained a disclaimer saying that it might be in error. "That gives a person an out," Dunphy noted.

Dunphy said that he did not know to what extent Cog had considered the privacy issue before going ahead with the sur-

vey. He said that he had not been with Cog when the decision was made to do the survey, and that, "I'm just a transportation planner; I'm just concerned about the data. The Bureau of Public Roads doesn't seem to feel it is an invasion of privacy."

Errors Likely

Dunphy stressed the likelihood of error in this sort of survey and said that because of the errors, the data was only useful for statistical purposes. "It is ridiculous to think of taking these records and going back to the individuals." He noted that in a survey of 30,000 households, where people were asked about their travel the previous day, they found an average of six errors per interview.

These errors were only ones that could be checked by a computerized editing program, and they represented only errors of consistency, coding, or completeness, according to Dunphy.

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Computers Should Think More, Talk Less, Users Told

WASHINGTON, D.C. — Computers are able to provide more information than man has time to use, so they should reduce the overload by absorbing more information than they produce, according to Dr. Herbert A. Simon.

A computer should listen and think more than it speaks, the Carnegie-Mellon University professor of computer science and psychology said.

Simon addressed the second session of an eight-month sym-

posium on "Computers, Communications, and the Public Interest" organized by Johns Hopkins University and the Brookings Institute.

Information condensation can be accomplished in two ways: by providing information only when it is needed or by filtering the information with the help of machine intelligence programmed into the computer, Simon said.

Behind the so-called information explosion problem is the

enormous duplication found in publications today, he said. Much of the library problem, for example, can be blamed on this redundancy, he said.

An information processing system, according to Simon, can reduce the amount of stored data by relying on basic facts and laws and deriving needed solutions. He postulated, "Good problem-solving capacities combined with powerful, but compact, theories may take the place of whole shelves of reference books."

"In a knowledge rich world, progress does not lie in the direction of reading information faster, writing it faster, and storing more of it. Progress lies in the direction of extracting and exploiting the pattern of the world — its redundancy — so that far less information needs to be read, written, or stored," he said.

Simon feels that for computers

to be used to improve man's condition, the user must be freed to concentrate on finding solutions instead of being drowned in data. Unlimited information-processing resources will be of no benefit if the user does not have time to think.

"We must assume, as mankind has always assumed, that if we do a reasonable job of allocating our limited attention and our limited powers of thought, we will solve the crucial problems that face us at least as fast as new crucial problems arise," he said.

The next lecture in the series will be held Nov. 13. Anthony G. Oettinger, chairman of the National Academy of Sciences Computer Science and Engineering Research Board, will discuss "Computers in the Decision-Making Process."

The symposium has received grants from the Alfred P. Sloan Foundation and the American

Federation of Information Processing Societies.

Patent Office Now Welcomes Software Patent Applications

(Continued from Page 1)

dragon away from contract-based program protection.

In commenting on the need for new legislation, Schuyler noted that "in the case of computer programs the essence of the matter to be protected . . . is primarily the investment of time, effort, and money in the development of the program." He called for a "system that will stimulate investment of manpower and money in the creation of software, and facilitate and encourage exchange of information among competitors and users. Such a system is essential to stimulate continued growth of software technology in an orderly and efficient manner."

Doud, speaking the following day, asked for a system that protects "the investment which goes into the noninvented innovation required to produce a workable program."

Doud said that "between 5 and 20% of investment goes towards developing new concepts, and 80 to 95% goes into the hard work involved in writing code, testing, debugging, and documenting." From this he argued for a registration system in which the program details were secret but a description of the concepts that underlay the program would be made public; patent protection would still be available for those who believed they had developed a patentable concept.

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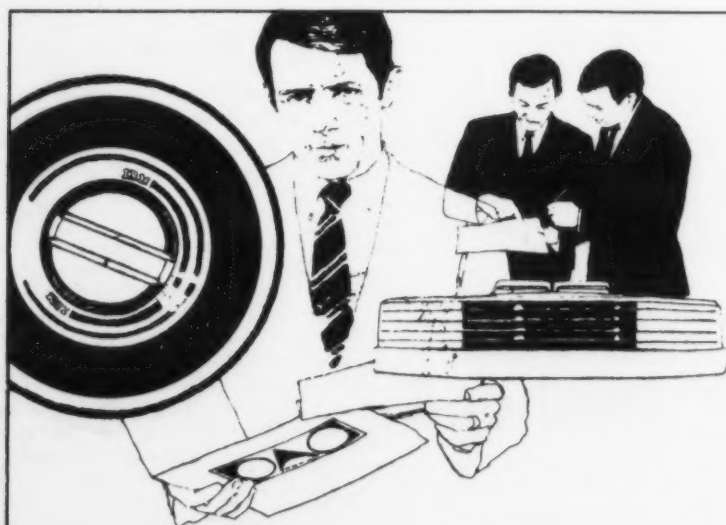
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'Instant' Computer Center

Company Installs System/360 in Less Than Six Weeks

By John Joss

Special to Computerworld

PALO ALTO, Calif. — The installation of a System/360, according to IBM, takes 12 months. A firm here installed a 360/50 in less than six weeks.

The crash schedule was dictated by a change in plans. Originally Applied Cybernetics Corp. had planned to take over a locally available 360/44. But at the last minute, the company decided the system was not suitable.

The original planning began last spring when the company realized that it needed a large computer to survive and grow in its segment of the computer business. Casting about for a machine, it discovered one that was to be moved and for whom a group of customers already existed. It figured therefore that acquisition of the machine would imply retention of the customers and a satisfactory kickoff for this new aspect of the Applied Cybernetics business.

To keep the customers happy, there had to be no interruption of service. This meant that when the old company moved out and back to Southern California, Applied Cybernetics had to be operating. Then the firm realized that the machine, a 360/44, was unsuitable for long-term utilization in the commercial computer business.

"It had to be a 360/50 or better," said Rene Eris, in charge of the computer operations for Applied Cybernetics. "But it takes many, many months to get a 360/50, and we were weeks away from our 'go' date."

In their search for the 512K Model 50 finally decided upon, company officials contacted every computer leasing company of repute and found one, Randolph Computer, interested in helping. "Just as happened at every other step — had to happen — the right thing came along at the right moment and saw us through," recalls Ed Burfine, president of Applied Cybernetics.

A glance at the activity chart illustrates the schedule of activities from the moment that the basic machine became available. It does not include some of the more intriguing aspects of the job, which appear now as minor

annoyances but at the time could have prevented the hopeful young company from opening the doors of its computer data center. For example, it does not show that the 360/50 they finally found was not complete, but very much "stripped." It had no tape drives, no disk drives.

"There are plenty of tape and disk drive manufacturers around, but just try to get two-week delivery," Eris said.

"In this growing industry, that's not just impossible... they give you the strangest looks just because you asked!"

In the end, two companies came through at the right millisecond — Marshall of Los Angeles sent six of its 2311-compatible disk drives, and Telex of Tulsa sent four tape units. "The actual delivery times ran in days, not weeks," Eris said.

Locating computing equipment suddenly became a trivial exercise, as the company realized that it needed a building to house the machine. After an odyssey in which realtors all over Santa Clara country took them to over 100 buildings — ranging from barns with earth floors to voting booths too small for an electric typewriter — a suitable building was finally located. But it was a mere shell — entirely without all the necessities for a computer operation. There were no subfloors through which the interconnecting cabling would pass; there was no air conditioning, and huge amounts would be needed; there were no offices, no electricity. All they had was a set of concrete walls and a concrete floor.

"The kickoff meeting, to get all the contractors and subcontractors together and see where the problems were, revealed the hidden part of the iceberg," Burfine said. "If you added all the time everyone said they needed, plus the estimates to install the machine and get it running, it would have been mid 1970 before we could have made it. So we just sort of pushed the schedule together, concertina-style, and attacked each problem as it arose. And every couple of days Rene Eris would write up on the board what it would cost us to cancel and go back to square one and forget the computer. Once it started to go over



Ed Burfine, foreground, and his jubilant staff stand in the computer center built from scratch in less than six weeks.

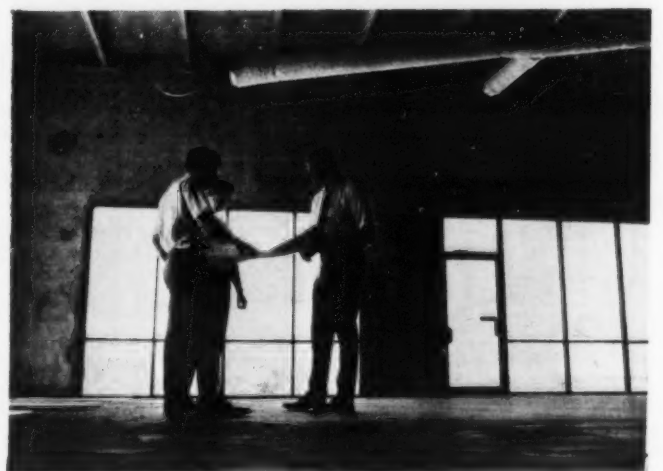
the median five figures, there was no going back. And anyway, by that time we needed the cash flow that would be generated by a productive computer installation. Needed it? It was a matter of survival."

The actual figure turned out to be \$30,000 per month for being late, a sum the 15-man company didn't have. Its kitty extended through the middle of June, with customers waiting in line who would go elsewhere if the installation didn't fly. In fact, everything did get done in time, as the activity chart shows. Quoting the contractors and subcontractors reveals some of the apparently insurmountable problems that arose and were solved:

David Vassar of Johnson and Mapes Construction: "The sub-floor supplier in Los Angeles delayed us two days. In the end I offered to drive down with my own truck to pick it up, but they got it to us. My men, working around the clock, put in 2,200 square feet of subfloor in one day."

Carl Wrzesien of P.G.&E.: "There wasn't even a power pole there, and that usually takes over a month. But my boys got it in there in less than a week."

Linton Stebbins, vice-president of Charles Farrow (the electrical



This is what the computer center looked like before work began.

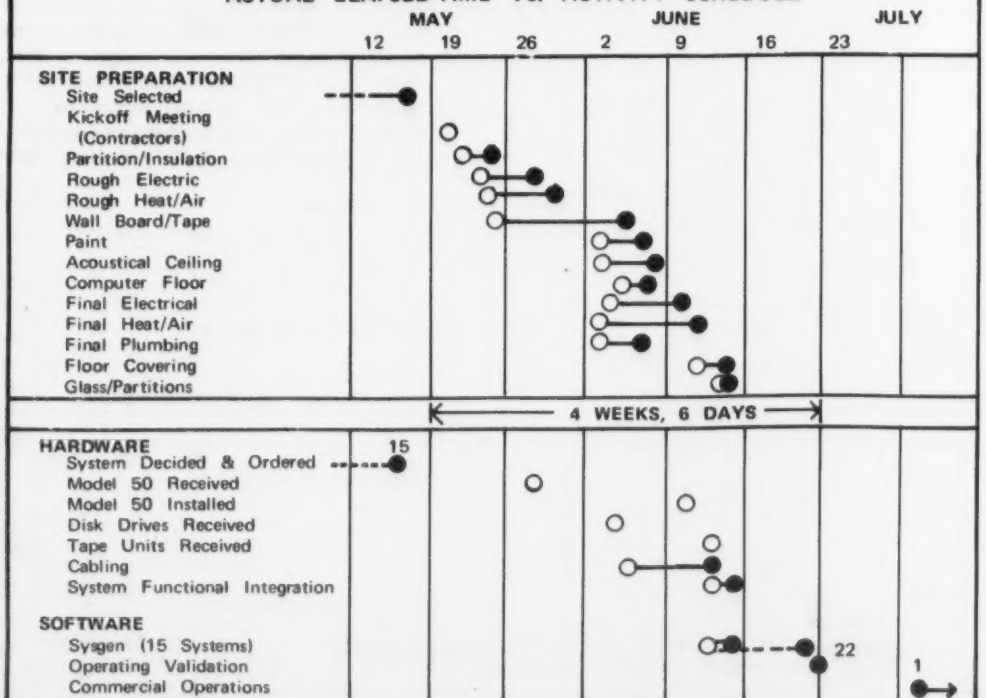
contractors): "Wiring a building for a computer is probably the most complex and difficult task we face. We had to charge in and do it, and they (Applied Cybernetics) didn't even have an inspected or approved plan. It's amazing what you can do when the adrenalin starts to flow."

The IBM installations expert: "We just had to throw away the book on this one. Normally we like 12 months, even for smaller systems, but six weeks...! We managed to complete the layout in three weeks, just as the first

pieces of hardware were going in."

Ed Burfine, perspiring young Applied Cybernetics president: "Everything had to go perfectly or we were, quite literally, doomed. The computer represents such a huge investment but such an extraordinary generator of cash once it's working that I can't understand why people don't move faster to get their systems in. Every day we were late getting our system into productive operation cost us \$1,000 in unrecoverable loss."

ACTUAL ELAPSED-TIME VS. ACTIVITY SCHEDULE



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Atar to Refile With CAB

Revised Reservation System Plan Would Provide for Competition

WASHINGTON, D.C. — Atar Computer Systems will probably file a new proposal for its computerized reservation system with the Civil Aeronautics Board (CAB) this week.

Atar withdrew its previous proposal last month after the Justice Department said that the agreement between Atar and 11 major airlines was, in effect, a collective boycott of other reservations systems and therefore violated the Sherman Antitrust Act.

Atar, by interfacing with airline reservation systems, would enable travel agents to make bookings on participating airlines directly without having to call the airlines. Each airline would maintain control over its own system.

Hotel and car rental reservations could also be made with Atar under an agreement between Atar and International Reservations Corp.

Exclusive Contract

Last year, the Air Traffic Conference (ATC), an organization representing 31 U.S. and Canadian carriers, gave Atar exclusive rights to negotiate with domestic airlines. Atar was selected over systems proposed by Control Data and Ruben H. Donnelly. Under the ATC resolution, signatures of 11 airlines representing at least 50% of domestic passenger miles were required before the ATC would designate Atar as the common system. Atar accomplished this in April. Airlines who signed with Atar agreed not to do business with, or provide information to, any Atar competitor.

But the ATC-Atar agreement could not become effective without CAB approval. Eight or-

ganizations filed protests with the CAB, and the Justice Department supported their protests, saying that the agreement was, in effect, a boycott of other reservation systems.

The CAB had scheduled a hearing for Sept. 3, but Atar withdrew the proposal before then. Len Klarich, marketing vice-president of Atar, said that Atar is renegotiating the contract with the airlines, "hoping to eliminate the harshness of exclusivity in line with what the Justice Department wants." Although wording is still being worked out, he said that the agreement would allow competition to come into the field. He said that the new agreement would probably be submitted to the CAB this week.

Telex Protests

The first plan was opposed by the Telex reservation system, Univac, and American Express.

Telex claimed that it had spent \$12 million developing "and perfecting" its system, and that there was no need for Atar to have an exclusive contract.

Univac said that granting an

exclusive contract to Atar would preclude the possibility of some other firm developing a superior system. The company also argued that the competition would be to the user's benefit, since competition would mean that the user had a choice of terminals. Telex uses Univac hardware, Atar will use IBM.

American Express said that it was experimenting with a similar system. It also claimed that the terminal Atar plans to use, the IBM 1977, is too complex for the average travel agent to use.

2,700 Terminals

Atar plans to use two IBM 360/65s in Los Angeles. Software will be a modified version of IBM's Pars (programmed airline reservation system). Agents will have a choice of IBM 1977 or IBM 2915 terminals. The initial capacity of Atar will be 2,700 terminals. The airlines themselves will not need any new equipment.

Cost to travel agents would be \$110 per month, plus \$10 for each 1,000 reservations over the first 2,000. There would be a maximum charge of \$160.



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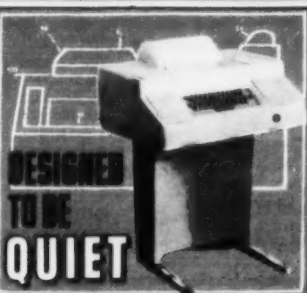
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Compu-Med System Processes Patient History Records

ANN ARBOR, Mich. — A computerized system for processing patient histories and physical information records is now available from Preventicare Systems, Inc.

A compact unit, the Compu-Med system consists of an IBM Selectric typewriter, an optical card reader, a computer, and two decks of optical mark cards, one to accommodate the patient-oriented medical history,



Compu-Med System



Digital Controller



Tape System



Memory System

New Products

the other the physician-oriented physical examination. The system was designed to meet the recommendations of the Joint Commission on Accreditation of Hospitals.

Compu-Med operates very

simply and requires no specially trained personnel, according to the developer.

Patient-oriented medical history cards are filled out by the patient, who answers yes-or-no questions with a pencil mark in the appropriate box. The questions are in layman's language, while a resulting typed report is in medical terminology. The his-

tory cards are scanned by the optical card reader, which loads the data into the programmed computer. After processing, the typewriter produces a patient history in as many copies as an individual user requires.

The physician is given the typed history printout and a deck of physical examination cards, both of which are in

medical terminology. As the doctor examines the patient, he fills in the cards and the deck is processed with a complete history and physical report output produced in less than five minutes, the company says.

The cost of processing the medical records is approximately \$3 compared with the national average of just under \$20 for

this operation in hospitals today, the firm says.

The company's address is P.O. Drawer 1188.

Digital Controller

FRAMINGHAM, Mass. — A digital controller with a 12-bit stored program featuring a plug-in removable control panel is available from Honeywell.

The H-112 is suitable for use in data acquisition, where it may act as a remote terminal, buffer unit, or an electronic data assembler and message switcher, the company says.

The unit is modular in design and contains a 4K memory. The unit can be tailored to varied control applications by the use of standard digital and analog modules and subsystems.

The device is priced at about \$5,000, and initial deliveries are quoted at 45 days. The computer control division is located on Old Connecticut Path here.

Tape System

WESTMINSTER, Calif. — A magnetic tape system for the XDS Sigma Series is now available from Multidata Inc.

The Model 320/323 reads and writes nine-track tape in IBM-compatible format and is fully compatible with XDS software.

The system features the CDC 9585 tape transport, which employs a dual-capstan pneumatic drive to move tape. The system's controller can handle up to eight transports, the manufacturer says.

The tape system is priced at \$48,000, and delivery is set at 120 days, according to the firm.

Company offices are at 15142 Goldenwest Circle.

Memory Systems

MINNEAPOLIS — Two compatible computer memory systems for high-speed systems are being offered by Precision Magnetism Inc.

The Celeritas 125, a read/write memory, and the Celeritas 125R, a read-only memory, both have ready cycle times of 125 nanoseconds. The 125 handles word lengths up to 150 bits and the 125R handles word lengths up to 96 bits.

The Celeritas 125R read-only memory is available to customers' specifications in 60-90 days. The Celeritas 125 read/write memory is available with deliveries quoted at 4 to 6 months, according to the company.

Precision Magnetism is located at 525 Park Ave.

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The only totally integrated, third generation system that offers all accounting functions with • COMPLETE DOCUMENTATION • TOS OR DOS ENVIRONMENT • BATCH PROCESSING.

CAS III, designed by CPA's for users of IBM 25/30/40/50 equipment, solves the many problems found in manual accounting and record keeping procedures. Modular in design, the system functions equally well as an in house system or under Service Bureau conditions, reducing normal handling of information up to 75%.

The system permits simulation of basic hand recording methods, follows generally accepted accounting principles and procedures, provides an effective method of error control and audit trail, and supplies formalistic presentation of data without special preprinted forms.

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The total system is modular, and independent groups of modules may be pur-

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Accounting reports headings, column designations, indentation, total levels, combining, scheduling, etc. are determined by the user, through input, to allow tailored report presentation. Ledgers require no fixed chart of accounts and allow 30 characters of alphabetic account description.

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All data enters the system through a journal or register and is automatically checked for arithmetic or posting errors. Errors are flagged and presented in an error analysis

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CAS III is adaptable to the needs of any size and type business: manufacturing, wholesaling, retailing, chains, franchising, banks, insurance, institutions, and services. System includes accounting Journals, General Ledger, Financial Statements, Government Reports, and financial reports needed for good management control. Program Manuals for set-up, operations and administration, including all needed forms, are furnished.

The Modules listed below may be purchased in one or more units, as needed:

PHASE I BASIC ACCOUNTING MODULE

- A. Journals
 1. Columnar Journal Format
 - a. Month, day, reference
 - b. Variable alphabetic description for payee, vendor, customer, etc.
 - c. Debit and credit trial balance
 - d. Variable journal and column headings
 - e. Cross foot error detection
- B. General Ledger
 1. Balance forward (or Historic, Phase II)
 2. Automatic calculation (tax percent, partnership, cost of goods sold, etc.)
 3. Automatic accrual posting (depreciation, insurance, taxes)
 4. Flexible Chart of Accounts
 - a. 1 to 6 digit code numbers (999-999)
 - b. 30 characters of Alpha for account titles
 5. Unique year-end file
 6. Year-to-date adjustment capability
 7. Current net change adjustments
- C. Formalistic Financial Statements (Profit and Loss statement, balance sheet, schedules)
 1. 8 1/2" x 11" (no account codes on statements)
 2. Upper and lower case print out and underlining available
 3. Variable statement headings
 4. 30 character account description
 5. Unlimited total levels
 6. Unlimited scheduling
 7. Unlimited consolidation of accounts
 8. Ratio and percentage analysis
 9. Current and year-to-date information

PHASE II ACCOUNT ANALYSIS MODULE

- A. Detail information for selected general ledger accounts are accumulated and produced upon request.

PHASE III STATEMENT CONSOLIDATION MODULE

- A. Allows consolidation of several individual businesses, divisions or departments.

PHASE IV BUDGETARY AND COMPARATIVE MODULE

- A. Budgetary financial reports.
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PHASE V SUBSIDIARY LEDGER MODULE

- A. Employees earnings records.
- B. Job cost analysis
- C. Accounts receivable
- D. Accounts payable

PHASE VI GOVERNMENT REPORTS MODULE

- A. All states. 941, W-2, 1099.
- B. Tip and meal calculation.
- C. Combined tax table (if used).
(Format changes or requirements created by the government are covered by maintenance contract.)

PHASE VII ACCOUNTS RECEIVABLE MODULE

- A. Statements
 1. Standard format
 2. Automatic service charge
 3. Alphabetic and numeric invoice description
- B. Aged Analysis
 1. Current 30-60-90 days aging
 2. Year-to-date customer activity
 3. Sales analysis (salesmen, territory, department, etc.)

PHASE VIII TIME ANALYSIS MODULE

- A. Productive hour evaluation.
- B. Time distribution by labor category, and individual.
- C. Extensions at assigned rates.

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WHY PEOPLE KEEP BUYING INTO A VANISHING BUSINESS.

Since the soothsayers first told us the unit record business was finished it has become fashionable to speak of it in the past tense. Fashion is one thing. The demand for economical data processing is another.

Despite what the tea leaves have said, it takes a service force of 1,000 to keep our customers happy. In the last eight months we processed 1,300 machines at our reconditioning plant.

That hardly sounds like rushing into extinction, and it isn't. But then, the unit record business is used to being called passé. Fifteen years ago the IBM 650 and the 705 were introduced and punched card equipment



was supposed to slip quietly into the Smithsonian. Now it's the System/3 and the hot shots are saying our only chance is to replace the abacus in Chinese laundries.

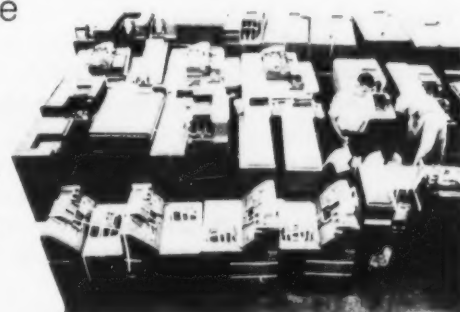
The unit record business has changed all right. But *changed* is not *gone*. At last count, there were over 40,000 unit record installations in this country. Punched card consumption goes up every year. Many companies, large and small, still rely entirely on punched card equipment for economical data processing. Others have found the machines serve well for back-up, and

computer editing. Much as the IBM 1401 (remember when that vanished?) is now being used in conjunction with more sophisticated computers.

And if you think the only people left in the unit record business are the brokers, you might get in touch with one of our sales representatives. He will assess your data processing requirements and recommend the right machines to do the job. You can rent them short or long term. Or you can buy them. Or both. However you choose to do it, we can save you money on any combination you want.

Then we back it up with a service agreement. That's why we maintain round-the-clock customer service offices in over 50 locations. And a 50,000-square foot reconditioning plant in King of Prussia, Pa. And an inventory of 16,000 unit record parts.

True, we're not likely to upstage those dazzling new computers. But meanwhile people have all that work to



get out. They want automatic data processing at reasonable prices. They want good advice, good equipment and good service. And that keeps us pretty busy. It takes a lot of hard work to run a vanishing business.

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☐ I would like to discuss my data processing needs.

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Editorials

The People's Computer

The growth of the computer industry has closely paralleled that of the automobile industry. The first cars were expensive and unreliable. Then, over the years, they became more reliable and began to sell in three price ranges: high priced, medium priced, and low priced.

Then came Volkswagen, literally "the people's car." Owners of higher-priced cars sneered. But the VW offered really low-priced, reliable transportation to people who formerly could not afford cars or who had to settle for unreliable used cars. Now the big auto manufacturers are bringing out inexpensive cars to compete.

Last week Viatron announced the Volkswagen, a complete computer system for the price of a \$100-a-week clerk. People with larger systems probably will sneer at its limited capabilities.

But we think there are a lot of people out there who are still doing things manually or with EAM equipment because they can't afford a computer. We think these people will be very interested.

And we think that when the big computer manufacturers see the response, they will decide they have to compete.

The ultimate beneficiary will be the user.

Ivory Tower vs. Reality

The fourth annual Symposium on the Applications of Computers to the Problems of Urban Society will take place Oct. 24 in New York.

But the meeting will be at the New York Hilton, and that should be the tip-off. Few of the real problems of urban society are visible there. As one spokesman for the organizers of the conference admitted, "There is really nothing on the relevant social issues of the day."

Papers will be given on the usual topics — government information systems, urban data bases, transportation — ways to make more efficient the city government of 20 years ago.

The computer field is probably the most rapidly changing in the world, yet we assume somehow that the outside world is not changing.

If we were willing to come out of the Hilton and wade into the real problems of our time, we could make a significant contribution. Computers could help improve the quality of life in the ghetto. Computers could give people more control over their government.

But solving these problems requires dealing with real people, and that requires a change in our thinking.



'The Computer Says We Can't Win Without Them'

Letters to the Editor

Personal Shortages, Surpluses Called Mutually Exclusive Ideas

Just what is "a surplus of young women" [CW, Sept. 24]? By what set of criteria, by what measurements — does one come up with a shortage? The two ideas, shortage, surplus, are mutually exclusive!

As a professional since 1951 in all aspects of DP I must comment — for the umpteenth time — there is NOT a shortage of programmers! There is, however, an ever increasing shortage, on ALL levels, of even mediocre management; the quoted manager above being a perfect example. The Peter Principle is here verified again.

Should business ever begin to use brains instead of brawn — e.g., better programming and systems vs. more core; women instead of men — we will know that the "surplus women" were finally allowed to rise to their true capacity; that the millenium had arrived.

Yvonne V. Cardemil

New York, N.Y.

SDS Customer Engineer Defends Level of Staff Competence

In the charges which accompany a lawsuit like the one between SDS and Data Network, the eventual settlement is not the total effect. Corporate attorneys and the courts will decide the litigation, but the charges alone will affect the reputation of SDS and its customer engineers.

In three years with SDS I have worked with quite a few of our CEs. When I consider these men I find the terms "inadequate" and "incompetent" to be inaccurate and ridiculous. In a recent survey we found our average CE had nine years computer experience prior to joining SDS, and, at 32.3 years, had 2.7 children. Feeding these 2.7 children depends on giving the customers the kind of efficient service that keeps them happy. We are backed up by a staff of technical specialists who (I can testify) are really ace. Each month our customers are asked about their satisfaction with each piece of equipment and the service. This is compiled into a report, which our managers study and act upon.

I don't know the circumstances of the New York case; maybe there were misunderstandings, perhaps we felt we should be paid, like any other business, when we provide a service. I do know

that our many, many happy customers, rapid growth and reputation have not been achieved by "inadequate" service.

Dave Williams
Sr. Customer Engineer

Scientific Data Systems
Anaheim, Calif.

Reader Questions CW Stand On Spending Federal Funds

As the guy who's bugged you rather incessantly pro-ABM, I notice a strange article on page 2 of your Sept. 3rd issue. We now get the cry that federal funds will not be available for computer research. Funny, you're for federal funds when it will enhance your playing with computers, but when it comes to the defense of your country, you're against federal funds.

Frank A. Mleko

Arlington Heights, Ill.

We have not taken an editorial stand on either issue. Ed.

Everyone's Voice Is Needed To Save Individual's Rights

I do not make a regular practice of writing to editors, but your editorial in the Sept. 3 issue on "Teacher Evaluation" is so excellent, to the point, and applicable that I felt I should express my appreciation. Keep on plugging for the rights of individual human beings in relation to computer applications — everyone's voice appears to be needed!!

Cdr. Paul W. Cobb, USN

San Diego, Calif.

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. Computerworld reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington Street, Newton, Mass. 02160.

Regulation of Credit Bureaus-Part II

You Can See Your Credit Records, But It's Not Easy

By Joseph Hanlon
CW Staff Writer

Massachusetts' new credit bureau regulations, as well as the ones proposed by U.S. Sen. William Proxmire, require that a person be told if he is rejected for credit or employment based on a credit bureau report. But he must go to the credit bureau to find out what is wrong.

What happens when a person goes to a credit bureau to check his file? CW assigned two reporters to find out.

When each arrived at the credit bureau, he did not identify himself as a reporter. The receptionist gave him a form to fill out. It contained a release that granted immunity from legal action to the credit bureau and all of its sources of information. In addition, the form asked for a complete financial and business history, as well as a list of "disputed and past-due accounts."

Must You Sign?

Is it necessary to sign the release? The answer varies across the country and even within the same credit bureau.

The reporters went to the same credit bureau at separate times. Both politely declined to sign the release or fill out the form. One was told that the release was really not required, and was then told the contents of his file.

But the other reporter was refused any information on his file. The general manager of the credit bureau told CW that the credit bureau's interviewer was in error in refusing to tell the second reporter the contents of his file, and that his credit bureau did not require that the release be signed. But there is no indication on the release that it is optional, and the release is called for in the guidelines of the Associated Credit Bureaus of America, the largest credit bureau trade organization.

Just a Plastic Envelope

At the credit bureau visited by the CW reporters, a person's file is a clear plastic envelope containing slips of paper. Included in the file are copies of credit card and charge account applications, public record information such as lawsuits and criminal actions, and notations on any accounts that have been turned over to collection agencies (many credit bureaus are also collection agencies). The file also contains a list of queries from potential creditors.

Since the file is just a collection of reports, it does not contain a credit "rating," and credit bureaus do not make ratings as such. However, the file may contain creditors' evaluations of payment rates.

Can You See Your File?

The credit bureau visited has one person, the customer service manager, who interviews most of

Credit bureaus are now being computerized, and Sen. William Proxmire has warned that if there is no regulation, they will become a national data bank. In addition, he warns, computerization will introduce a new source of errors and past errors will be frozen into computer memories.

In response, Proxmire and various state legislators have proposed regulation of the credit-reporting industry. Massachusetts is one of the first states to pass such a law. Since events there may serve as a prototype for what happens in other states and in Washington, this four-part series considers the controversy surrounding the new Massachusetts law, as well as the implications of the law itself.

the people who want to talk about their files. The first reporter, who had not identified himself as a reporter, found the customer service manager polite and friendly, but confused as to why the reporter wanted to know the contents of his file. After some discussion, however,

he read aloud the contents of the file. But he refused to let the reporter actually see the file, saying that the rules forbade it.

Later, the CW staffer identified himself and spoke to the credit bureau's general manager. Asked if the credit bureau permitted a person to see his own file, the

general manager replied that a person would not want to, since much of it was in code. When pressed further — much further — he finally said: "If you wanted to see your record, you could."

Why then, he was asked, had the reporter been told that he

could not see his record? Because the customer service manager was "suspicious" of him, was the answer. Therefore, as the general manager finally conceded, a person can see his own record only if the credit bureau decides "he has a legitimate interest in seeing his record."

Stronger legislation that would have resulted in a person knowing the contents of his file without actually going to the credit bureau was defeated in Massachusetts. Part three of this series tells one legislator's story of "fierce" lobbying pressure, which he says defeated stronger credit bureau regulation.



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Now you can cut your computer input costs in half. This new innovation in data preparation techniques gives you two money-saving advantages over conventional keypunch or one-key-board/one-magnetic-tape-per-operator systems: (1) the LC-720 employs a computer time-shared input; (2) it is the only system available that provides data output directly on IBM/360-compatible magnetic disc.

By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of as much as 50% can be achieved. Costs drop to as low as \$4300 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM/

360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, pooling, merging and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Naturally, an IBM/360-compatible magnetic tape is also provided with the system as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Record size is infinitely variable by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different format control programs, all available simultaneously to any and all operators.

LC-720 KeyDisc System

Bring your own data for a demonstration

Logic Corporation invites you to see an operating demonstration of the LC-720 KeyDisc System at the company's premises. Bring your own original data and Logic will provide a reel of magnetic tape of the output of your data from the LC-720 for later printout at your own computer facility.

To arrange for a demonstration,
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Data Users Apathy on Communications Called Favorable to Bell Rate Boosts

HOBOKEN, N.J. — An official of a private communications consulting firm has charged that a lack of interest exists among communications users on matters affecting tariffs and the cost of data operations.

Curt Gamlin, president of Telcon Associates, said that during the past six months, various operating companies of the Bell System have filed literally hundreds of tariff modifications that will vitally influence the operation and cost of voice communications and data transmission "for years to come."

Gamlin said that an increase of 20% in a corporate bill, regardless of technical questions,

should be a matter of no small concern for a typical company.

As an example, Gamlin cited a recent hearing before the New York Public Service Commission to consider a \$175-million rate increase requested by New York Bell.

"My recollection is that there were less than 20 persons present, of which about 14 were from the telephone company. Even the chairman of the commission commented on the lack of interest shown in a rate increase of which better than half, or \$100 million, would be charged to New York businesses," Gamlin said.

As a result of this showing,

according to Gamlin, his firm sent individually addressed letters to the top executives of 6,000 companies in the greater New York City area, advising them of what was at stake. Even with direct personal notice, less than 100 firms took action to interest themselves in the proceedings and express an opinion.

Gamlin concluded that unless interested and knowledgeable people in computers, communications, and data transmission take a constant and active participation in what is now being written into the tariffs, data communications will take place in an environment designed to suit Bell System "at costs much higher than they need to be."



COMPUTERWORLD

communications

FCC Bureau Urges Denial Of MCI Reconsideration

WASHINGTON, D.C. — The Common Carrier Bureau of the Federal Communications Commission has urged denial of petitions from several common carriers, including the Bell System, for reconsideration of a recent authorization for a special service microwave system between St. Louis and Chicago.

The reconsideration petitions were filed by Western Union,

General Telephone of Illinois, and Bell to counter the establishment of a common carrier microwave link to be operated beginning in mid-1970 by Microwave Communications Inc.

As part of the reconsideration requests, AT&T said that "the grossly inefficient use of valuable frequencies and wasteful duplication of existing facilities would result..." from the MCI link. Bell added that a "lack of any substantial showing of need" for the new service existed.

In commenting on the charges raised in the reconsideration petitions, MCI President John Goeken said that the common carriers were "grasping at straws" in an attempt to block the MCI authorization.

Goeken said that evidence of the need for the MCI communications was given by the more than 100 customers that had already subscribed to the St. Louis-Chicago service.

MCI is now preparing a position paper for the FCC answering the allegations raised by the common carriers.

Goeken said that the reconsideration petitions prove that Bell "has no respect or consideration for the public."

The FCC, in its original ruling authorizing the MCI link, said that the public should not be denied prospective competition in the area of data communications. In a separate statement, FCC commissioner Nicholas Johnson said, "We have long authorized private microwave systems for individual companies... MCI will simply be doing... what each could have done for itself had it the volume of business to justify the investment."

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- Sets up programs on the job stream file for link edits, testing, cataloging or flowcharting.

It uses simple, one-card control throughout. Any program language may be stored or intermixed... including Cobol, Fortran, Adpac, PL / 1, Autocoder, etc. Test data decks, object decks, and job control language decks may also be stored. New statements, deletions, and modifications are easily made.

THREE REPORTS

Modifications: each time PLUS is run, a report of changes is produced. Keep these in a cumulative file, and you have a complete audit trail of revisions.

Index: printout shows each file name, programmer's name, version or modification number, date of last revision, activity counter, and number of statements.

Job Scheduling: report lists job control setups, so you can estimate run time and anticipate tape mounting or other intervention required.

OTHER FEATURES

Retrieval: Programs or parts of programs are easily retrieved to tape, disk, printer, or punch, with one-card command.

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You aren't quite sure how many programs you have. Or where they are. Or which are the latest revisions. Or who revised them, or when. Or, if you've ever run the wrong version by mistake, or missed a deadline. Or wasted computer time by inefficient testing. Or, if you've run out of card space, or need off-site backup. See what we mean? Everyone needs PLUS!

Fast, Multiple Processing: Many programs and/or changes to programs can be entered at once, and are all updated, compiled and tested at computer, not operator, speed.

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October 15, 1969

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Codon Announces Cobol For the Digital PDP-10

WALTHAM, Mass. — A Cobol compiler for the Digital Equipment Corp. PDP-10 is available from the Codon Corp., according to the company. The system can operate either in a time-shared or batch environment and requires no mass storage devices, the company says.

The Cobol-10 compiler can be run with most I/O devices and requires a minimum of 12K of core for compilation, the company claims. Source devices can be specified for both input and output of the compile stage.

Cobol-10 has a full complement of verbs, including the COMPUTE verb, and permits both random and sequential file processing, according to the company. Variable length records are supported, either blocked or unblocked, and label writing and checking are automatic.

With the use of the ENTER verb, Macro-10 assembly language statements may be coded into the Cobol program directly, the company says.

The package is available for immediate delivery, says the company, on a lease basis of \$1,000, plus \$1,000 per month. Company offices are at 400 Totten Pond Road.

Language Is Designed For Financial Analysts

NEW YORK — A special-purpose language designed to assist financial analysts and planners in tabulating and preparing reports from detail data has been developed by Directed Research Inc.

The language, Fourteen Column Worksheet (Forcol), provides users of batch and time-sharing computers with a rapid method of generating tabulations, graphs, and reports of time-oriented data, the company claims.

"Forcol enables the preparation of complete presentation (reports, graphs, or overlay graphs) for the most complex application with a few hours," says Russ Daley, general man-

ager of DRI software development.

Forcol versions are now available for the IBM 360/50, the 360/65, and the CDC 6600. An interactive version is available on the 360/67 and is planned within three months for Applied Logic's AI/Com 10. The full operating system requires a 256K memory, according to the company.

All calculation and report capabilities normally required are built into the language. Users may also create special application routines of their own and incorporate these into the Forcol command structure, the company says.

The purchase price, about \$4,000, includes installation, training, and maintenance services. Lease price is estimated at \$100 per month or \$1,000 per year.

DRI is located at 909 Third Avenue.

Conversion For 1401-360 Users

WESTCHESTER, Ill. — Auto-Bal, a conversion package for changing 1401/1440-type programs into S/360 Assembly language, is being offered by Communication Dynamics Systems, Inc.

The system, available either as a service or for sale as a package, is claimed to flag all unconverted statements (those due to indexing or address modification).

When offered as a service, the company says, Auto-Bal will provide a 100%-complete conversion. The system requires an IBM 360/30 or greater, with at least 64K and two tape or disk drives.

The system operates on the Autocoder source program and produces a complete BAL program as output.

The service seems similar, essentially, to that being offered by several other firms, with the exception of its lack of ability to accept 1401 object-code as input.

The company, based here at 10353 W. Roosevelt Road, says it intends to offer licenses for use of the package to other software firms.

Walk-In Time-Sharing Offers New Evaluation and Testing Opportunity

NEW YORK — It is now possible to walk into the offices of Time Brokers, Inc. and make use of any one of several time-sharing services. The company calls the operation its Walk-in Time-Sharing Democenter, according to the announcement by William P. Hegan, company president.

Prices for time will run from 25 to 50 cents per minute and will include the use of resident consultants/instructors to facilitate use of the various services, Hegan says.

He pointed out that companies could use the Democenter as an aid in selecting and evaluating various time-sharing services. "The aim of the center," Hegan says, "is to provide overload services for larger users and production-level work for smaller users." He pointed out that the center intends to remain open during evenings to facilitate its

New Program Creates Test Data And Increases Testing Efficiency

PHILADELPHIA — A computer program that automatically creates the data files required to test Cobol programs has been developed by Management and Computer Service, Inc. (Macs).

Called Datamacs, the program logically expands all variables in the data division of a Cobol program into the simulated data file required to test the program.

"This program is changing the normal programmer routine significantly," says Macs Vice-Presi-

dent David Brill, developer of the program. "The normal procedure of creating test data, preparing it for input, then generating files for testing purposes is completely eliminated."

The program, designed to operate within the framework of the normal load-and-go Cobol testing environment, works through the use of control cards interspersed through the data division of a Cobol program. The programmer, after placing the

control cards in his source deck, then follows his normal pattern of compiling and testing.

The language of Datamacs is very similar to Cobol, with identical rules of syntax. The programmer controls the specific files for which data is to be generated and the field values to be generated in the records of the files. Datamacs generates several types of files, including tape and disk. It operates under either DOS or OS with the IBM 360 and can be regenerated by Macs for any hardware supporting a Cobol compiler and a minimum of 32K of core.

Datamacs is installed and operating at Keystone AAA of Philadelphia. Joseph McMenamin, the company's DP manager, told CW, "We are very enthusiastic about this system. It saves us man-hours in putting together test data, and the data we get has at least double the integrity of the test data that we put together."

The program will soon be installed at about five more sites in the Northeast, according to Macs spokesmen.

Datamacs, the first of a series of programs to be marketed by Macs, sells for \$4,500. A lease plan is being worked out.

Macs is located at 104 Park Towne Place East here.

New Package 'Maps' Path To Better Bank Payroll

JENKINTOWN, Pa. — A documented payroll software package for banking systems is being offered by Computer Systems Technology Inc.

The modular automatic payroll system (Maps) has covered every step of a model bank procedure to demonstrate to a new bank a workable path either to follow or to build on.

Special input forms provide a uniform method of reporting changes in a manner that expedites low-cost preparation of record changes, according to the company. The forms cover special deduction changes; consolidated changes; employee change notices; payroll time sheets; and new account, new employee, and employee number changes.

The output provides complete reporting of file maintenance, payroll grand totals, payroll company unit totals, payroll deduction registers, payroll journals, wages and taxes, and paychecks or deposit slips.

Maps' installation has been refined to simplified step-by-step procedures to enable most EDP-oriented bank personnel to in-

stall and maintain the system quickly and easily, the company claims. All technical information required for Maps installation, as well as necessary technical assistance, is provided, says the company.

The system is warranted to be error-free and in good working order, based upon hardware configuration and associated software referenced in a standard agreement of sale. This warranty is good for one year from date of purchase. The Maps package is priced at \$4,500.

The company's address is Suite 700-42, Fox Pavilion.

'Detoc II' Adds Decision-Table Uses

JENKINTOWN, Pa. — A new decision table-to-Cobol preprocessor, known as Detoc II, offers "the finest Cobol statements that can be generated from decision tables," according to the developer, Information Systems Leasing Corp.

Detoc, the company's original package, provides the user with a method of specifying a decision table and then having the table

automatically converted into a Cobol source program. The company claims that decision tables can significantly reduce program development and debugging, as well as creating a major aid to proper documentation.

The company's offices are here in The Plaza. The price of Detoc II includes complete support, training, and maintenance, according to the firm.



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COMPUTERWORLD

societies

New Association Seeks To Involve Programmers

CHICAGO — A new nonprofit organization for computer programmers, to be called the International Association for Computer Programmers, is well into the process of formation and growth.

With its charter articles and bylaws ready to be filed with the State of Illinois within the next two weeks, the association is intended to be national in scope with both state and local chapters in operation.

The purpose of the organization is to meet the needs of computer programmers. Three potential projects have already been cited.

They are educational training programs for both programmers and computer operators, a monthly publication, and a voluntary group insurance plan.

In addition, the association hopes to have the ability to establish foundations and grants, and to loan money for continued education.

Chicago will be the first charter chapter. In both Des Moines, Iowa, and Madison, Wis., four to eight programmers have formed committees to lay the groundwork for future development and membership.

Richard Lynch, 464 Somonauk St., Sycamore, Ill. 60178, can be contacted for additional information.

Technical Sessions and Exhibits Head 1st South Central Computer Conference

HOUSTON — Plans have been completed for the first South Central Computer Conference. This conference, jointly sponsored by the Houston chapter and the Manned Spacecraft Center chapter of the Association for Computing Machinery, will feature both technical sessions

and an extensive exhibition.

The aim of the conference, to be held Oct. 20-21, is to highlight the following areas: pioneering computing ventures in the South Central region; computer products and services of the region; leading people in the area's computing community; and the re-

gions anticipated computing activity in the next decade.

H. Ross Perot, Robert Westhouse, and E.H. Brock are among the speakers invited to address conference attendees.

An attendance of 1,500 is expected, drawn primarily from selected contacts with over 4,000 computer professionals through membership rosters of data processing societies, such as DPMA, Operations Research Society of America, Association for Systems Management, Simulation Council Incorporated, and IEEE.

The mailing address for correspondence related to the computer conference is: P.O. Box 58593, Houston, Texas 77058.

ACM Holds Microprogramming Class

NEW YORK — The special interest committee on microprogramming of the Association for Computing Machinery will sponsor a special evening tutorial session on microprogramming at the Fall Joint Computer Conference in Las Vegas.

J.R. Douglas of GE and S.S.

Husson of IBM will present the general concepts of microprogramming as a technique for designing computer controls.

The tutorial will be held on Tuesday, Nov. 18, in the Pan American Room of the Stardust Hotel from 8 to 10:30 p.m.

Programmers/Systems Analysts: Put your knowledge behind advanced programming packages at IBM



Service Centers, A Forward Look, Is Adapso Theme

NEW YORK — "The Changing Posture of Computer Service Centers" is the theme for the 27th management conference of the Association of Data Processing Service Organizations to be held in Atlanta, Oct. 30-31.

Assembled speakers will discuss the issues of the future and observe courses of action to meet the rigors of new competition, advanced technology, the narrowing personnel market, and the general problems of operations.

Topics to be covered include: "The Function of the Investment Banker as Related to the Service Center Industry," "The Problems and the Future of Time-Sharing," and "Telephone Data Communications."

Control Technology Studied By IEEE Computer Group

ENCINO, Calif. — The Data Acquisition and Control Committee of the IEEE's Computer Group is sponsoring a two-day workshop on "On-line Data Acquisition and Control System Technology," Nov. 20-21.

At the informal meeting, which directly follows the FJCC, workers active in the areas of administration, management, design, application, and operation of these systems will explore problems, progress, and promises of the technology.

For large users, the workshop will provide a better understanding of needs that may not be effectively met by today's technology. New concepts, new hardware, and systems aspects will also be covered.

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COMPUTERWORLD

applications

Processed by Computer Vital Race Horse Statistics

AMARILLO, Texas — A computer is helping to make book on horses, but it's all strictly legal.

The American Quarter Horse Association, the largest equine registry in the world, has put a Honeywell Model 200 computer to work maintaining the daily records of about 600,000 horses.

The computer provides daily racing form information for each registered horse running at any track in the U.S., according to Clifford Smith, data processing manager for the AQHA.

Racing information is relayed daily from racing tracks throughout the country to Amarillo and is posted to individual horse records. The next day, the computer transmits the updated information to the tracks by telephone, where the statistical data is printed in the daily racing form as an aid to racing fans.

This track information includes how many races the horse has entered, how it fared in each, how much money it won, condition of the track, the order of finish, wind direction and velocity at the time of the race, the odds, and the weight of the jockey, Smith explained.

In addition, the computer calculates a "speed index" number based on the race track records and the individual horse's per-

formance at that track, he said. "We compare the horse's time at a track with the track record and compute a rating that is of benefit to the racing fan," he said.

"Without our computer system, it would be impossible for us to provide the quarter horse owners with many of the services they receive. We do more things with a computer than any other horse registry," Smith said.

Another important function of the computerized horse-registration system is to insure against duplication of names. When an owner wants to register his colt, he submits a registration form that includes three possible names. The computer then scans its list of registered horse names, discards any that are duplicates, and selects one that has not been recorded.

Then the computer prints out an index card that includes the new horse's name and official registry number.

"It would be impossible to keep up with this daily accounting of each horse if we did not rely on the computer," Smith said. He estimates that the dozen persons in his department are able to do the work of about 150 persons because of the computer.

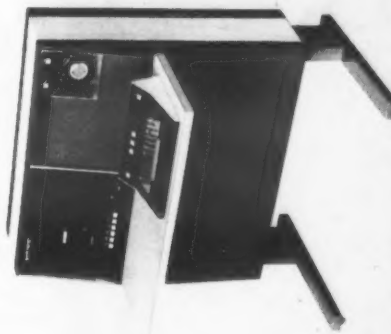
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A computer-produced "picture" of a chromosome is examined by Dr. Peter Neurath, right, geneticist at New England Medical Center.

Computer Detects Abnormal Chromosomes To Probe Human Radiation Exposure

BOSTON — Possible long-term effects of radiation on man's heredity may be revealed by studies being performed here for the Atomic Energy Commission (AEC) with the aid of a computer.

Comparatively little is known about the cumulative effects of very small amounts of radiation on the body's chromosomes despite extensive use of radioactive material by industry, science, and the military. Chromosomes are microscopic, threadlike bodies in cells. They control an individual's heredity.

Dr. Peter W. Neurath, director of the physics division of the department of therapeutic radiology at New England Medical Center Hospitals and assistant professor at Tufts Medical School, is using an IBM 360/30 to analyze chromosomes. His work is funded mainly by the AEC.

"You can detect a person's

cumulative exposure to radiation by chromosome analysis," Neurath explains. "Radiation shows up as a few abnormal chromosomes, maybe one in 100 cells, maybe three in 100 cells, depending on the amount of exposure."

"If we can develop an inexpensive method of detecting abnormal chromosomes, we may be able to monitor exposed populations while determining with greater accuracy how much radiation a person can safely absorb without genetic harm," he says.

The advanced form of biomedical pattern recognition employed by Neurath uses photomicrographs and an optical scanning device produced by Electronic Image Systems, Inc. linked to a computer to measure a chromosome, usually isolated from white blood cells.

The scanner, called a programmed input quantizer

(Piquant), measures the contour of the chromosome including its length, mass, and the ratio of its short arms to total length.

Using a 35-mm photograph of a cell magnified 400 times, the Piquant scanner can measure the film density of 614,000 different points on each frame in a few seconds.

The scanner transfers the most interesting of these points — which are like the dots in a newspaper photo — into the computer by measuring the dot's lightness or darkness.

A report on the computer-analyzed findings is then printed by the 360/30 for review by the researcher.

Formerly, each chromosome was measured manually, a laborious task for a laboratory technician who often spent as many as 2,000 hours analyzing the chromosomes of 50 patients.

Using a computer, it now takes considerably less time to analyze the chromosomes. The computer also provides less deviation in measurement, allowing a geneticist to be more precise in his analysis.

PDP-9 Monitors Explorer Orbits

CAMBRIDGE, Mass. — American Science and Engineering, Inc., a research firm, has built a computer system using Digital Equipment Corp.'s PDP-9 to simulate and ground check the operations of an Explorer spacecraft.

The spacecraft will be used to measure celestial x-ray sources while in a minimum six-month earth orbit. The Nasa-sponsored Explorer is being prepared for a mid-1970 launch from San Marco, Africa. During orbits, the x-ray experiment data collected in space will be digitized and sent back to the earth via PCM telemetry in a serial bit stream.

The computer will essentially fill two roles. Before the capsule is sent into orbit, the PDP-9 will be used to check the operation of the experiment.

The use of the computer for 22 different tests on the ground will permit correct calibration, check the operation of the experiment, and determine the threshold levels that resolve the sensitivity of radiation recording devices on board.

This complete checkout will be performed by the computer and the interfaced peripherals, also supplied by DEC, in a 2-1/2-hour period. According to George Pegram, American Science and Engineering's senior systems engineer, without the computer it would take two engineers two weeks (or about 160 hours) to do the same job.

The peripherals include a high-speed tape reader and punch, a nine-track magnetic tape unit and controller, an analog-to-digital converter, a digital-to-analog output converter, two relay buffer controls, a buffer between the computer and telemetry output, a parallel to serial converter, a telemetry timing clock, and digital buffers.

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Free Second-Generation Systems Offered As Incentive to Curriculum Development

By a CW Staff Writer

HARTFORD, Conn. — Free computers are being offered by the Technical Educational Consortium (TEC) to induce the development of approved curricula in electromechanical engineering at junior colleges and technical institutions.

Prompted by the growing need for well-trained technicians in the computer, numerical control, and business machine fields, TEC devised the plan to provide more post high school programs where students could receive thorough training. The computers will be used to give students a realistic understanding of the relationships and interaction between data processing mechanisms.

The second-generation IBM and Univac machines are awarded by a panel of three judges to nonprofit accredited schools whose proposals for programs leading to an associate degree meet the criteria of the consortium's guidelines for technical education.

TEC's curriculum guide was developed in cooperation with the U.S. Office of Education, and its supporters include IBM, Honeywell, Univac, and Xerox.

Guideline Criteria

The guidelines include specifications in such areas as the caliber of the faculty assigned to teach the new curriculum; facilities for classes and labs; the excellence of present two-year post high school programs in electronics, electricity, and mechanical technology; plans for training faculty to teach the new curriculum; and the general professional status and accreditation of the institution.

Following announcement of the competition, more than 400 institutions requested copies of the guidelines, and 27 proceeded to submit proposals for review.

An initial supply of 25 computers has been exhausted, but the sponsors were so encouraged by the response to the competition that an additional 27 systems have been made available.

Assistance Available

Unsuccessful applicants may revise their proposals for reconsideration and may request assistance from TEC in reworking their entries.

Although the date is not firm, the consortium would prefer to receive rewritten or new proposals by Nov. 1. Copies of the guidelines are available from TEC Chairman Douglas Fellows at 200 Bloomfield Ave., West Hartford, Conn. 06117.

Schools receiving the computer awards will be able to begin their new programs at the second semester of this school year.

Since the first semester of an acceptable program is spent covering fundamentals, the equipment does not become an essential tool until the second

Education

phase of the program. The machines will have been modified for educational use and will be delivered before summer of 1970.

The consortium encourages additional preparation and participation by the proposed department faculty.

Toward this end, several workshops are being organized and conducted by the consortium's member schools.

Fellows noted that other firms wishing to donate equipment to this effort should contact him.

He added that departments of technical education need individual components, linkages, sub-assemblies, and other related equipment, as well as complete systems.

1401, 1410, 1440 FOR SALE

IPS has several IBM 1400 series systems for sale or lease. Included are a 1401 40K tape system and 80K CPU, 1401 4K and 8K card systems, 1401 8K to 16K tape systems, 1401's with 1311 discs. Inexpensive 1401 D-3 (tape-to-printer only) deliverable in 90 days. Three 7330 tapes available separately to add tape capacity to 1410 or 1401. 1440's with 8K to 16K core, 2 to 5 1311's. For price, delivery and detailed specifications, please write or call.

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Any of the eight systems can handle batch processing as well. Essentially, you're getting two computers for the price of one. The boss surely will be interested in that.

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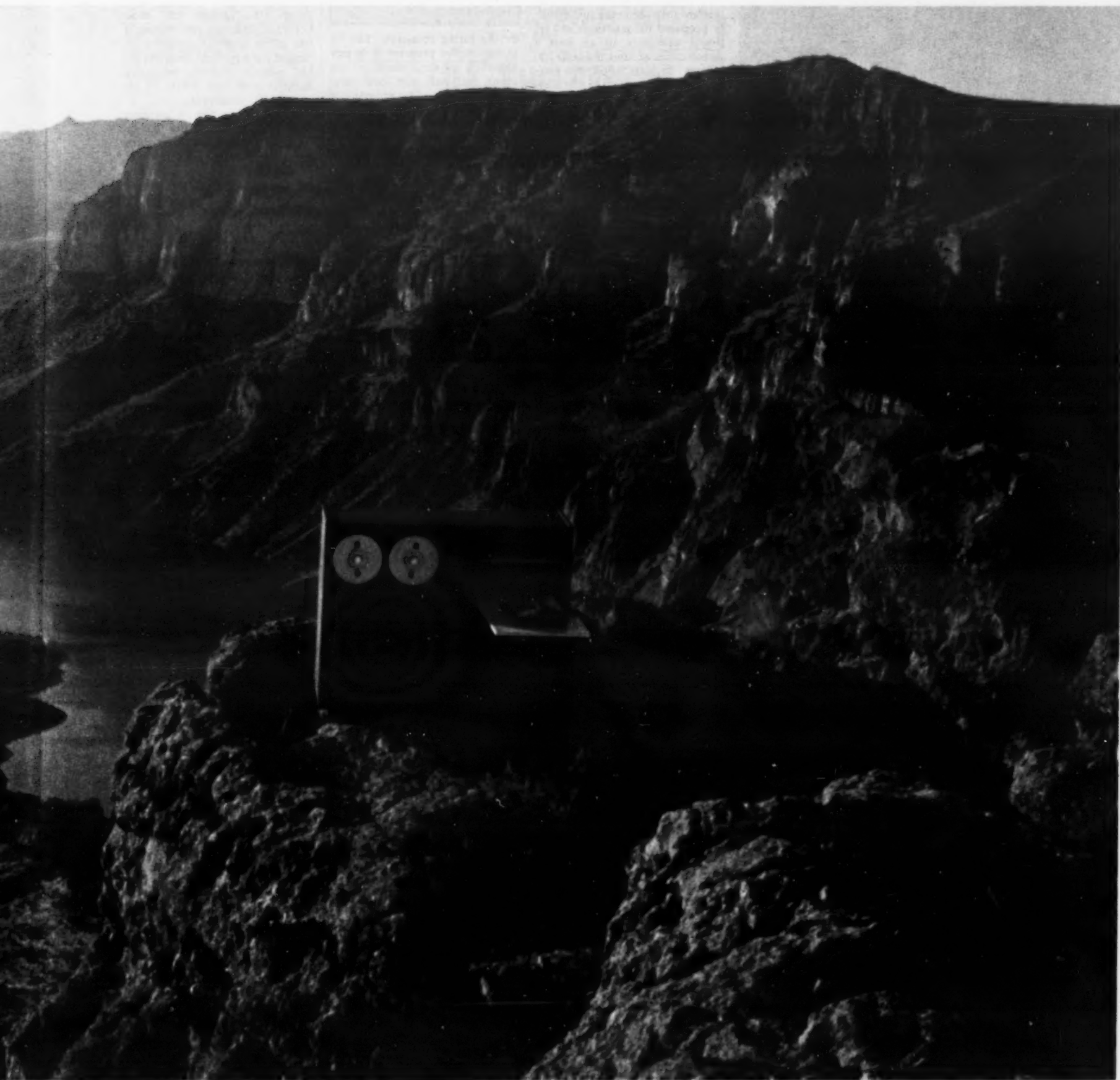
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And we created a full division to make 52 different models. With



unique Honeywell features like smooth vacuum tape drives and electronic keyboards second to none.

We delivered the first of these units over a year ago. And pretty soon Keytape began showing up everywhere.

Now we find that people are

using the name Keytape to describe anything that records data onto magnetic tape.

Before things get completely out of hand, we'd like to make one point.

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A student in a class of hard-core unemployed discusses course materials with her instructor. The students, all welfare recipients, are being trained in keyboard skills needed by local industry.

Local Job Picture, Social Preparation Receive Attention in Operator Training

By Kate Rachstein
CW Education Editor

CHICAGO — Between 300 and 400 people recruited from the welfare rolls are being successfully prepared for positions as keyboard operators in at least a dozen cities around the country.

Begun in early 1969, the project is being conducted by Keyboard Training, Inc. (KTI), a New York-based company that specializes in job training on a wide range of keyboard-oriented machinery. The field includes keypunch machines, encoders, magnetic tape machines, and other computer-related equipment.

No Fees
No fees are paid by the trainee

Education

or the hiring company. The expense of the program is largely absorbed by the federal government, but state and local agencies are also funding programs in some areas.

KTI estimates that their cost for training one individual runs between \$1,000 and \$1,500. The expense of supporting a person on welfare for a year, on the other hand, is usually between two and three times that amount.

According to Dean Gordon,

KTI vice-president, social programs division here, most graduates are placed very shortly after completing their training, and many are "spoken for" even before completing the course. In the latter case, it is often arranged for a student to spend his last week's training becoming familiar with the work of his prospective employer.

A Chicago personnel manager contacted by CW stated that he would have three graduates starting for his company this week. He added that he had interviewed a fourth student, only a week into her training program. He was "so surprised and astonished at her attitude," he said, that he had already offered her a job.

Compiling a Record

So far the endeavor has met with notable success. In Illinois, 90 jobless were trained and more than 80 are now working; in New York City, 30 were trained and 20 are working; and in West Virginia, nearly all of 16 trainees are now employed.

Asked for her impression of the program so far, a data control supervisor in a firm that hired one of the early graduates bubbled, "The training school is fabulous! The key is that they'll train these people on the kind of equipment we use. The people know what they're doing when they come out of the school."

Such results are no accident. Steps are taken early to maximize the satisfaction of both the prospective employee and employer.

Industry's Needs Surveyed

Before training begins, KTI surveys an area's business community to determine the kinds of jobs available and the types of equipment being used. Local companies are approached directly about their needs, and information is obtained from the marketing representatives of various manufacturers. This helps prevent developing skills for which there is no demand and workers for whom there are no jobs.

To help avoid disappointment and high turnover rates for employees, trainees undergo a battery of tests designed by KTI. Their purpose is to establish a level at which the trainee is likely to meet with success, but without becoming bored after a short time. Gordon says that "they enable us to gear a person to the proper kind of keyboard they should learn."

Occasionally a student is "de-selected" when it becomes apparent that she is unlikely to perform satisfactorily, but very few participants have dropped out.

Multiphase Preparation

Gordon suspects that another reason for the course's success is its attention to the social, as well as technical aspects of getting and holding a job.

"In order to help people on welfare you have to understand all their problems and you have to help them solve those problems," he says. "Unless you do

(Continued on Page 23)



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LA Courses Feature System Design, CAI

LOS ANGELES — Two computer-oriented courses will be offered by Education Training Consultants Co. here next month.

Computer-Assisted Instruction Systems, Nov. 3 to 14, is directed at educators, training directors, and computer system managers interested in creating, installing, and operating computer-assisted instructional systems.

Said to require no computing background, the class will include course development, CAI programming, and practice lessons produced by class participants. The fee is \$550.

The second course, entitled Designing Education and Training Systems, will be held Nov. 17-22. It was structured for education laboratory administrators, special projects directors, research managers, curriculum planners, media specialists, business and industrial training directors, and military training personnel.

Participants will receive instruction in computer simulation methods and will apply the techniques of Anasynthesis (analysis, synthesis, modeling, and simulation) to complex education and training problems.

A mathematics or engineering background is said not to be necessary. The fee is \$300.

Registration forms may be obtained from the Professional Division, ETC, 815 Moraga Drive, Los Angeles, Calif. 90049.

Welfare Recipients Prepared for Jobs

(Continued from Page 22)

this, any training program is doomed to failure.

"For example, some of these people have never been more than six blocks from their home. If you give them an address and tell them to go there, some of them would not know how to take a bus. Somebody has to show them.

"I remember one woman who came to a building that had a self-service elevator. She had never ridden in such an elevator and didn't know how to push the button for the fourth floor, so she just went away. This is why working with the people we do you cannot just be concerned with teaching a skill."

To cope with such adjustment problems, the social programs division maintains a staff of people with social science backgrounds. Among their current projects is a plan for organizing day-care centers for the children of women who wish to find jobs.

Most training classes run from eight to ten weeks, seven hours a day. Gordon estimates that about 35% of this time is spent covering such topics as successful interviewing techniques, money management, appropriate dress, and makeup. An attempt is made to keep the pupil/teacher ratio at about ten to one so that individual attention is readily available.

One West Virginia class is even being taught in an equipped mobile unit. KTI feels that such arrangements may be of value in areas where adequate facilities wouldn't otherwise be available for training.

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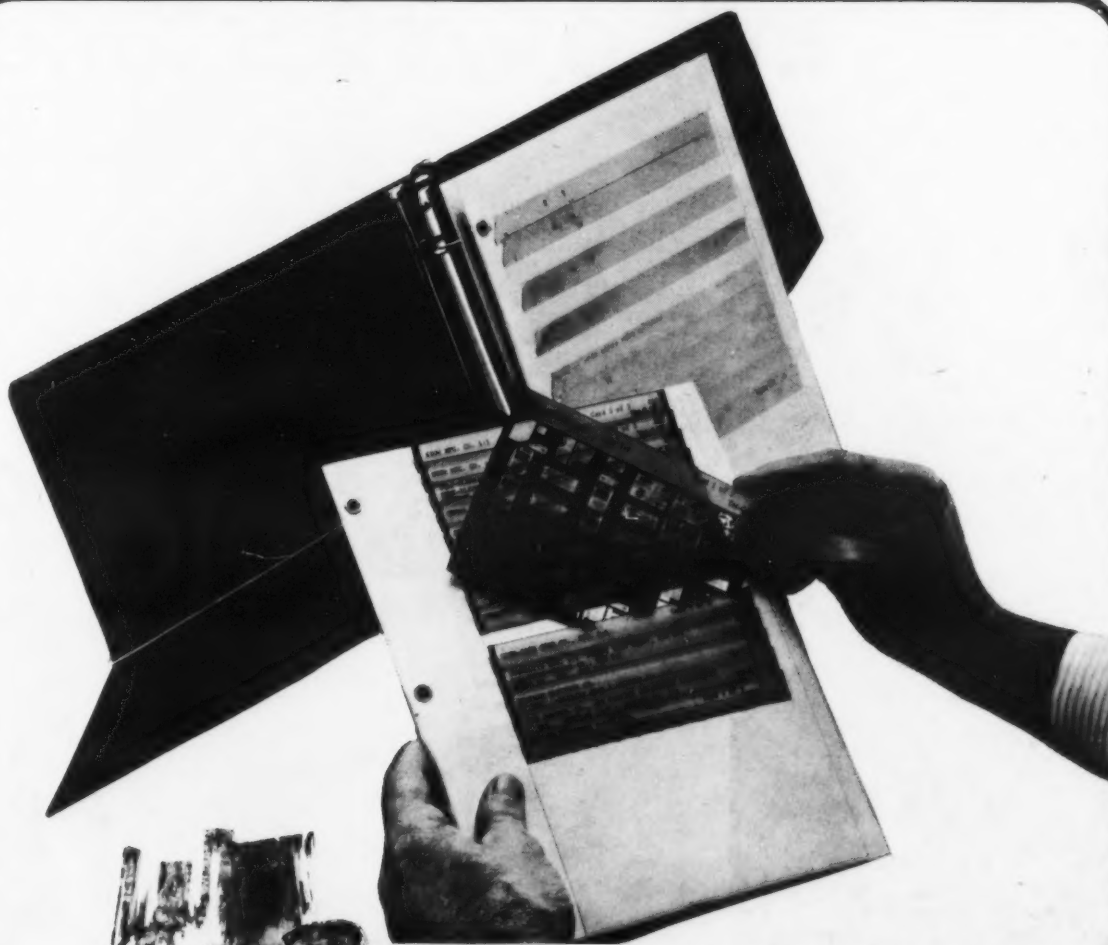
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The Other Computer Company:
Honeywell

October 15, 1969

Page 25

Allen-Babcock Viewpoint**Gal President Keeps T/S Firm Profitable Since Start**

Mrs. Michael Allen-Babcock

By Phyllis Huggins

Special CW Correspondent

LOS ANGELES — Allen-Babcock Computing, Inc., a time-sharing service bureau, has quite a few distinctive features.

One of them is that the president is a lady. Further, she is the first lady that the investment firm of Kuhn, Loeb & Co. has backed in its 102 years in business.

The firm recently floated a \$3-million private placement for Allen-Babcock.

As a manager, Mrs. Michael Allen Babcock has chalked up a record of keeping the firm in the black every year since it was founded in 1964.

No lightweight in business, she cut her eye teeth on the speculative oil-drilling business in Texas. If there is anything wilder than the computing business, it's oil drilling.

As Mrs. Babcock puts it, "The DP industry is akin to the oil field. You have an idea, think it could be very commercial, research it, and arrange financing for production. In oil field work you also have heavy equipment investment, the same as here."

Smooth Sailing

It hasn't all been smooth for the lady president. "Approaching bankers in the early days was rough.

"I must have knocked on the doors of every bank in Los Angeles before finding one who would have confidence in us.

"Cash flow is very important to a young company.

"There are those mossbacks who will always think a woman belongs in the kitchen.

"However, in the meantime we were continually building up our revenue base. Then when I went

to Wall Street, I had a record that was so fine that it was no problem to obtain the backing. With a good record, opposition disappears."

As far as the time-share field goes, she predicts: "I think we'll see the fallout in the time-sharing companies in this next year. Some went to Wall Street too soon and have raced through their money. Then what do they do for an encore? I agree with those who think it is going to be quick and brutal."

Ex-Husband-Wife Team

A husband and wife team prior to their divorce, Mrs. Babcock, president, and James D. Babcock, chairman of the board, make a smooth working combination. They exude the completely integrated rapport of a couple that works very well together.

Mr. Babcock handles the technical side of the business while Mrs. Babcock handles the money.

"The secret to staying in the black," she said, "is timing your expansion carefully.

"Some time-sharing companies have expanded so fast that they've outrun their hardware. You can't staff multiple centers adequately if you expand rapidly.

"I've always had a hard eye to the budget. Living within it is the key.

"If the budget says you can spend \$5,000 on advertising, you don't spend \$6,000. All staff members wear multiple hats. Our only luxury is that the staff is paid well and they are always increased."

James Babcock has equally firm ideas about the technical side of the business. They are the only company using a modified IBM 360/50 as the basis of their business.

When asked why he selected and then modified the 50, he replied, "We are the only firm who can have 64 users connected simultaneously to the CPU. By changing some instruction in the read-only memory, we got a 30% throughput increase."

Uses PL/1 Exclusive

Allen-Babcock is distinctive also in that they use PL/1 exclusively. "We may add Basic, but we are well satisfied with PL/1.

"It can do everything. More than 50% of our users are commercial businesses. Most of the time-sharing companies are talking to engineers. You can run out of them. We are much more widely based. We can write an application for any industry. We subletted it to where it's as easy to learn as Basic. There was some resistance to it when we started, but that has gone away. It's an amazing language. Also, we don't have to dilute our manpower with experts in several languages."

He concluded with a strong

(Continued on Page 31)

'Crossref' Trading System Established for Block Buyers

LOS ANGELES — A computerized trading information system has been delivered to Jefferies & Co., Inc. The system, labeled Crossref by its originators, will be used internally by Jefferies to service institutional customers who wish to transact the buying and selling of listed securities in block sizes.

The design and development of Crossref was undertaken as a joint venture between the Wolf Research and Development Corp. of Riverdale, Md. (a subsidiary of EG&G, Inc.), and the Catalactics Corp. of Chicago, a financial systems consulting firm.

Crossref is a combination hardware/software information retrieval system that automatically maintains on a large data file a composite record of individual customer "stock-assets" expressed as holding, buying, or selling

interest, according to Wolf.

The three interest positions are identified by customer code, stock symbol, price, block quantity, and data of completed transaction or order.

Using a list processing routine, the system provides Jefferies with a cross-referencing capability to align and visually review the particular interests of single or multiple customers against the matching interests of other customers.

The systems hardware components are a Varian 620/i digital computer for central processing, a teletypewriter for direct or remote interface with the Varian 620/i, a multistation CRT system for display and a disk pack drive for mass storage and back-up file protection.

At a sacrifice in speed, the CRT can be eliminated and the teletypewriter used for input/

output requests.

Located in Los Angeles and recently involved in acquisition discussion with Investors Diversified Services, Inc., Jefferies specializes in institutional block

trading by conducting its business in the so-called "third-market," where listed securities are traded on a net-price basis, over-the-counter trading, and block positioning.

**Scientific Data Systems
Now Xerox Data Systems**

EL SEGUNDO, Calif. — Xerox Data Systems is the new name for the California-based computer company which for eight years has been known as Scientific Data Systems.

Representing XDS President Max Palevsky, who is in Europe, Executive Vice-President Dan L. McGurk announced the name change at a press conference in New York early this month.

"We are making this change," McGurk said, "because our former name no longer accurately reflects the kind of marketplace we serve.

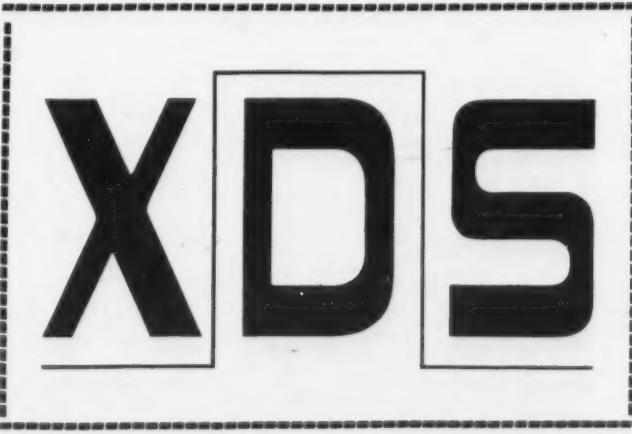
"Our early interests and capabilities were geared to serving the scientific community, and we established a good reputation in that area which we intend to maintain. During the past few

years, however, we have expanded our sights to include such fields as education, medicine, business, and government.

"We felt we needed a name which would be more widely recognized, particularly in the business area."

It was that need which led SDS to adopt its parent company's name, McGurk stated.

"In May we merged with Xerox Corp.," he said. "Along with many other reasons, the merger came about because we found that our two companies shared several important areas of interest and had common goals. One of the most important future growth areas for XDS will be in business data processing and the Xerox name will certainly help us there."



New Trademark for Xerox Data Systems

**ITN Loses Over Million
Setting up T/S Service**

BETHESDA, Md. — International Telecomputer Network Corp. has accrued a loss from operations amounting to \$1,076,078 in its shortened fiscal year ended June 30, 1969.

Roger B. Gregory, president of the computer time-sharing and remote access batch-mode processing firm, noted that the loss had been anticipated due to "substantial costs" associated with building ITN into a computer service organization. ITN began offering service on its \$4-million computer system last December.

During the fiscal year, ITN developed a library of more than 200 computer applications and proprietary programs to serve a variety of users in the business, scientific, and financial communities.

The firm said it has built its full-time staff to 120 and has opened sales offices in New York, Philadelphia, Baltimore, Atlanta, and Cleveland in addition to sales headquarters in Washington, D.C.

ITN's most recent computer program addition is Omnitab, a new language developed for use by market research analysts, mathematicians, statisticians, comptrollers, budget planners, and actuaries.

This language, based on a program developed by the National Bureau of Standards, is claimed to eliminate the manual computations performed on multi-column worksheets and transfers this time-consuming chore to the computer through simple command instructions.

Earnings Reports

INDUSTRIAL NUCLEONICS CORP.

3 Months Ended July 31

	1969	1968
Shr Ernd	\$.10	\$.06
Revenue	4,339,000	3,584,000
Earnings	326,000	192,000

INTERCONTINENTAL SYSTEMS, INC.

6 Months Ended July 31

	1969	1968
Loss		
Per Shr	\$.17	\$.27
Revenue	7,167,491	4,582,057
Loss	354,861	569,877

CLARY CORP.

6 Months Ended June 30

	1969	1968
Shr Ernd		
(Loss)	(\$.29)	\$.52
Revenue	4,893,000	5,823,000
Earnings		
(Loss)	(361,000)	538,000

DPA, INC.

9 Months Ended August 31

	a1969	b1968
cShr Ernd	\$.65	\$.39
Revenue	18,891,023	11,173,332
Earnings	1,553,419	819,181
cAvg Shrs	2,371,248	2,102,701

a-Includes operations of Burton Inc. from date of acquisition May 1, 1969; b-Restated to reflect results of Pioneer Texas Corp., acquired on a pooling-of-interests basis in August, 1968; c-Based on average shares outstanding, assuming conversion of both preferred issues.

GRAPHIC SCIENCES INC.

Year Ended June 30

	a1969	c1968
Shr Ernd	\$.03	\$.03
Revenue	\$3,397,864	341,333
Net Loss	2,209,168	b26,993

a-The companies began revenue-producing operations on Jan. 1, 1969, with respect to their graphic communications systems and prior to Sept. 1 and Dec. 1, 1967, with respect to their information services and computer leasing activities, respectively. Expenses incurred for these activities prior to such dates have been deferred; b-Income; c-For period from March 6, 1967 (date of incorporation), to June 30, 1968.

Correction

ALPHANUMERIC

6 Months Ended June 30

	1969	1968
aRevenue	\$1,171,048	
Loss	325,523	\$667,302

a-In August, 1969, the company renegotiated its contract with IBM. The changes include an increase in the original contract price. Sales income in this six-month period reflect the retroactive price adjustment on the systems accepted by IBM.

LUNDY ELECTRONICS & SYSTEMS

Year Ended June 30

	1969	1968
aShr Ernd	\$.12	\$.58
Revenue	15,646,556	15,363,611
Earnings	107,482	b544,616
Tax Cred		44,220

a-Based on net income from operations; b-Equal to 63 cents a share.

MICROFORM DATA SYSTEMS

Year Ended Aug. 1

	1969	a1968
Net Loss	\$1,121,350	
a-Comparative figures are not available as the company was formed Aug. 20, 1968.		

MARSHALL INDUSTRIES

3 Months Ended August 31

	1969	1968
Shr Ernd	a\$.34	\$.16
Revenue	6,317,300	5,656,300
Earnings	c654,100	133,800
Spec Cred	b348,100	

a-Based on income before special credit; b-Income tax reduction from loss carry-forward and gain on sale of partnership interest; c-Equal to 73 cents a share.

BARNES CORP.

Year Ended June 30

	1969	1968
aShr Ernd	\$.60	\$.53
Revenue	\$3,611,201	2,287,652
Earnings	300,993	226,330

a-Based on the weighted average number of shares outstanding during each period, amounting to 505,280 shares in fiscal 1969 and 429,280 in 1968.

FIMACO, INC.

6 Months Ended June 30

	1969	1968
Shr Ernd	\$.03	\$.02
Revenue	1,002,390	870,826
Earnings	21,572	9,996

AMPEX CORP.

3 Months Ended Aug. 2

	1969	1968
Shr Ernd	\$.29	\$.26
Revenue	68,558,000	58,976,000
Earnings	3,093,000	2,485,000

CONSOLIDATED ANALYSIS CENTERS INC.

Year Ended June 30

	1969	1968
aShr Ernd	\$.16	\$.10
bRevenue	1,475,373	1,145,564
bEarnings	151,874	94,571

a-Based on the actual number of 974,827 shares outstanding on June 30, 1969; b-Revenue and earnings include those of Associated Computing Services Inc., a wholly owned subsidiary, on a pooling-of-interests basis.

COMPUTER DYNAMICS, INC.

Year Ended June 30

	1969	1968
aShr Ernd	\$.12	\$.03
Revenue	1,054,500	184,849
Earnings	106,860	26,723

a-Computed on a weighted-average basis.

MANAGEMENT ASSISTANCE INC.

3 Months Ended June 30

	a1969	1968
Loss		
per Share	\$.13	\$.20
Revenue	17,623,372	17,122,859
Net Loss	641,751	812,352

9 Months Ended June 30

	1969	1968
Loss		
per Share	\$.25	\$.70
Revenue	54,006,162	49,589,652
Net Loss	1,153,574	2,834,281

a-MAI pointed out that results of operations for the 1968 and 1969 fiscal periods are not directly comparable because of variations in the amortization of certain expenses and the provision for deferred taxes. In addition, while substantially all of MAI's revenue in the 1968 fiscal period was derived from rentals, outright sales of MAI peripherals were almost \$5 million for the nine months ended June 30, 1969.

HATHAWAY INSTRUMENTS INC.

Year Ended June 30

	1969	1968
Shr Ernd	\$.49	\$.20
Revenue	4,997,949	4,046,215
aEarnings	347,412	136,932

a-After taxes.

WYLE LABORATORIES

3 Months Ended July 31

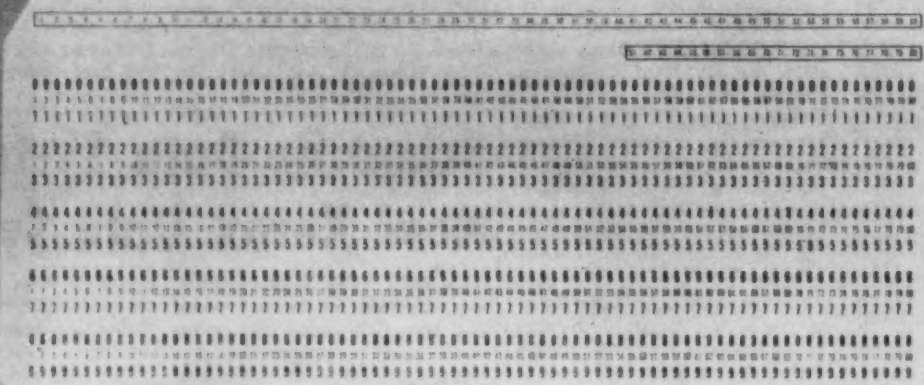
	1969	1968
Shr Ernd	\$.16	\$.16
Revenue	26,917,464	13,996,770
Earnings	564,041	508,935

6 Months Ended July 31

	a\$.23	\$.34
Shr Ernd		
Revenue	51,692,260	28,059,408
Earnings	814,254	1,104,412

a-Operating results are adjusted to reflect acquisitions made on a pooling-of-interests basis.

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Viatron Drops 90 Cents/Share in Quarter

BEDFORD, Mass. — Viatron Computer Systems Corp. reported a consolidated net loss of \$2,617,000, or 90 cents a share, for the three months ended July 31, 1969.

Sales for the period were \$223,000, all attributed to Viatron's wholly owned subsidiaries, Viatron Programming, Inc., Burlington, Mass., and Photics Research Corp., Montgomeryville, Pa.

Edward M. Bennett, board chairman and president said, "Economic and marketing analyses have indicated that further market penetration and an im-

proved financial condition can be achieved by offering System 21 for sale as well as for lease. Consequently, Viatron will sell its equipment to those customers who prefer to purchase rather than lease."

The basic selling price for any of Viatron's equipment was recently set at 48 times the monthly rental cost.

Bennett also noted that Viatron is establishing a nationwide dealer organization of independent data processing software, service, and systems firms.

"Dealers will be responsible for

both marketing and customer support of Viatron System 21," he said.

This dealer network will also market, on a contract basis, software programming for Viatron's general-purpose computer, he said.

As of the end of the quarter, Bennet said, Viatron had on hand \$8,055,000 in cash and marketable securities.

A Viatron spokesman said that the company was "considering" another public stock offering, but made no further details available.

For the nine months ended July 31, Viatron reported a net loss of \$4,969,000, or \$1.84 a share, on sales of \$471,000. Comparative figures for 1968 show a loss of \$487,000, or 41 cents a share, on net sales of \$24,000.

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Acquisitions

Scientific Control Corp., a Dallas-based computer developer and manufacturer, has agreed in principle to acquire General Design, Inc. of Melbourne, Fla., a manufacturer of card readers and card punches. The acquisition was made for an exchange of stock, in which GDI stockholders would receive one share of SCC common stock for 3.5 shares of GDI stock. GDI would become a wholly owned subsidiary of SCC. Simultaneously, SCC acquired Graham Magnetics, Inc., manufacturer of magnetic tapes, in an agreement whereby Graham shareholders would receive one share of SCC common stock for each two shares of Graham.

Programming Sciences Corp., a

software development and systems programming firm, has agreed to acquire Administrative Systems, Inc., a Mineola, N.Y., service firm, for an undisclosed amount of PSC common stock and warrants. The acquisition is subject to the approval of the boards of directors of both companies.

United Data Centers, Inc., a New York-based network of data processing centers, will acquire Computer Results Corp., West Springfield, Mass., an independent data processing center.

URS Systems Corp. may soon enter the leasing business with the acquisition of Occidental Leasing Systems, headquartered in Mountain View, Calif. Although Occidental is currently involved in leasing a variety of industrial and electronic equipment as well as computer-related equipment, URS does not plan for Occidental to lease computers.

Through an exchange of an undisclosed amount of stock, Information and Computing Centers Corp. of Dallas has acquired DataStrat, Inc., a firm specializing in the computerization of geological and geophysical data. DataStrat will operate as a wholly owned subsidiary of ICC.

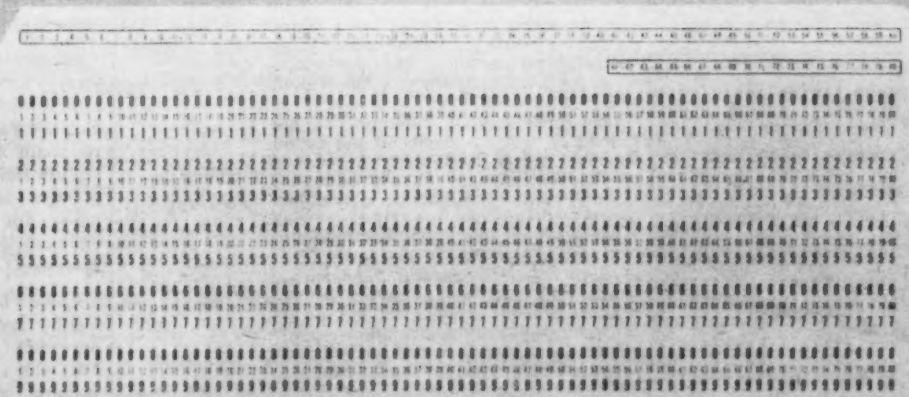
E.P.G. Computer Services, Inc. has acquired certain properties and assets, consisting primarily of proprietary software packages, of the computer division of Longardner & Racek, Inc. A Midwest architectural and engineering firm, Longardner & Racek developed these two engineering-oriented programs for architects, engineers, and construction firms.

A substantial interest in Applied Decision Systems, Inc., a firm providing management education and consulting services in the management sciences, has been purchased by W.R. Grace & Co. ADS is the successor to the business formally conducted by the Management Science Center of Sterling Institute, Inc.

Ensco, Inc. of Springfield, Va., will expand its capabilities with the acquisition of the analytical systems division of Comtel Corp. Ensco products will now include both hardware and software, as well as contract research and development.

Data Architects, Inc. has entered into an agreement to acquire Alto Scientific Co., Inc. of Palo Alto, Calif., for an undisclosed number of shares. Alto Scientific is a manufacturer of wideband microwave instrumentation products of standard and custom design. The agreement is subject to the approval of the board of directors of Alto Scientific.

Electronic Assistance Corp. of Red Bank, N.J., has agreed to acquire a 70% interest in Auto-Trol Corp., of Denver, Colo., a manufacturer of digital graphic and data systems. Under the terms of the transaction, involving an undisclosed amount of cash, Auto-Trol will operate as an independent subsidiary of EAC.



Theirs.

See the difference?

Let's face it. Most punch cards look pretty much alike. But before you assume they are alike, take a look at some of the things your card reader will notice. A perceptive card reader will see that CDC punch cards are clean, precise, chip-free, with round corners to eliminate fouling. And, the cards hold their dimensional stability because they're made in a controlled temperature/humidity environment.

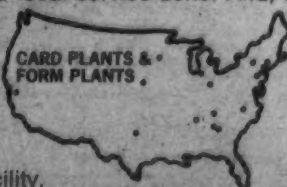


CDC punch cards are made to work perfectly—not nearly perfectly. After all, that's what you're looking for in standard cards. But when it comes to custom card forms—billing, shipping, registration, checking—you need more than quality. You need experienced creativity. Coincidentally, CDC also has the know-how that leads to short-cuts, time-cuts, and cost-cutting.

Besides all that, CDC has close to 20 card and form production facilities across the nation, so you're never outside a local service zone. And, if you're a large company with diversified operations, you can buy centrally, get volume discounts and arrange for delivery from the plant nearest each facility.

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Contracts

Systems Automation Corp. of Silver Spring, Md., was awarded a one-year \$130,000 contract by the Office of the Deputy Chief of Staff for Personnel of the U.S. Army for the design, development, and installation of a management information system for manpower planning. SAC offers a full range of services in operations research, systems analysis, and software development.

The Syracuse City School District has entered into a contract with Media Services and Captioned Films, Bureau of Education for the Handicapped, United States Office of Education, to establish a computer-based project for the evaluation

and development of educational materials for the handicapped.

Ennis Brandon Computer Services, a Dallas firm specializing in providing data processing services to small businesses, has selected the Burroughs B2500/3500 computer system for its centers.

A \$1.1-million Air Force contract to support the advanced ballistic re-entry systems program has been awarded to TRW's software and information systems division. The competitive 23-month contract calls for TRW to develop and provide a real-time guidance program, guidance equations, range safety data, and flight-support documentation.

Computer Applications Inc. has been selected by the City of Atlanta, Ga., as the systems consultant member of a consortium that will design a comprehensive municipal information system. The city expects to qualify for a grant of \$2.5 million from the Department of Housing and Urban Development to aid in establishing its system as a model for meeting the needs of the nation's cities.

P.G. Foret, Inc., Sudbury, Mass., has been awarded a \$356,212 contract by the General Services Administration for EDP magnetic tape cleaners. The devices will be used for magnetic tape maintenance in government

EDP installations throughout the world.

An agreement has been reached whereby the National Data Processing Corp. will develop a life-insurance data processing system for the new Univac 9400 computer. The new system, based on National Data's existing Lila Mark II system, will be marketed by Univac and licensed by National Data.

The Library of Congress has awarded a contract to Hobbs Associates, Inc., a Corona Del Mar, Calif. computer consulting firm, for a study of the requirements for terminals in the library's central bibliography system. This contract covers the development of performance

specifications for types of terminals to be used by the library, a survey of the state-of-the-art in terminals, projection of terminal developments through 1972, and cost and trade-off studies of alternatives. Computer Command and Control Co. of Washington, D.C., a software firm specializing in systems analysis and file management systems, will assist Hobbs.

A newly formed Australian computer service bureau, Compunet Limited, Sydney, has contracted for a \$2.3-million Univac 1108 computer system to process scientific, engineering, and business data for Compunet's clients.

Computer Sciences Corp., Los Angeles, is developing improved techniques for modeling and simulating groundwater flow systems to enable better conservation of underground water resources under a six-month contract awarded by the Water Resources Division of the U.S. Geological Survey. The methods to be developed will have broad application in the planning and utilization of groundwater supplies and represent new means of predicting the rate of movement and the concentration of pollutants such as chemicals and insecticides in groundwater.

Information Storage Systems, Inc., Cupertino, Calif., has signed a \$5-million contract with Hewlett-Packard calling for ISS to begin mid-1970 deliveries of an undisclosed number of disk storage drives and disk drive units for use with Hewlett-Packard computer time-sharing systems.

Varian Data Machines, Irvine, Calif., has signed a purchase agreement with Burroughs Corp. for the delivery of a large number of Varian computers and related equipment. The agreement's total value is estimated at about \$8 million. It is anticipated that the Varian computers will be used as controllers for remote peripherals and as data concentrators in communications networks to provide remote access to large Burroughs computers.

Adtrol Electronics, Inc., Philadelphia, a subsidiary of K D I Corp., Cincinnati, Ohio, has been awarded a contract by the Department of the Navy for a Film Digitizer System 100. The system automatically reduces film data to determine trajectory parameters of various high-speed missiles and space vehicles and permits the normal engineering and sequential data to be extracted from film for computer entry.

General Analytics Corp. of New York has been awarded a sole-source, \$161,500 contract by the National Institute of Mental Health, U.S. Department of Health, Education and Welfare, to develop an automatic data processing system to increase the scope, accessibility, and utility of information that supports the planning and evaluation of community mental health centers.

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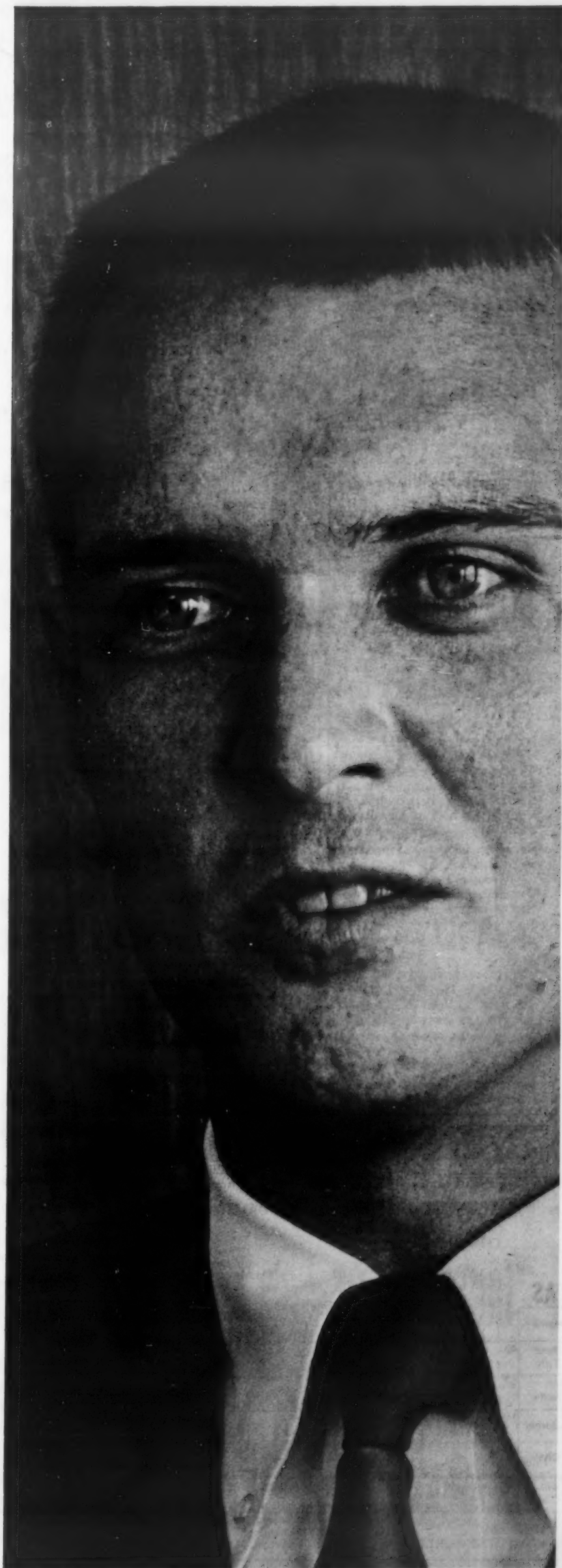
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Honeywell Starts a Worldwide Group To Handle Its International Activities

WELLESLEY HILLS, Mass. — Honeywell Inc. has established a worldwide organization to handle its expanding international computer activities.

The new International Computer and Communications Division will direct Honeywell computer activities in Europe, Latin America, the Middle East, Southeast Asia, and Africa. It will also provide staff support for computer operations in Canada, Australia, and Japan.

From headquarters in Wellesley, the ICC division will direct marketing, manufacturing, and field service; product planning and development; and finance and administration outside the U.S. for all four divisions of the

computer and communications group.

The ICC division joins four others under the leadership of Charles L. Davis, group vice-president. They are the electronic data processing division, Wellesley Hills, Mass.; the computer control division, Framingham, Mass.; the communications and data products division, and the information services division, both in Minneapolis.

Allan L. Rudell, vice-president of computer operations, Europe, has been named vice-president and general manager of the new division, Davis announced.

The present European computer organization, consisting of a headquarters staff and three

operating regions, will now be part of the new division. The Mexican computer operation will become part of ICC on Jan. 1, Davis said.

The ICC division will include a worldwide network of 52 sales and service offices in 17 countries, as well as manufacturing facilities in Newhouse, Scotland; Heppenheim, Germany; and Bowmanville, Ontario, Canada.

Rudell has predicted that the European computer market alone will double over the next three years, and that "Honeywell will grow at a significantly faster rate than this market." The company says it will have well over 1,000 computer systems installed or on order in Europe by the end of 1969.

Honeywell now has more than \$1 billion worth of Honeywell-designed, third-generation computer systems installed worldwide. Computer personnel exceed 17,000, including 5,500 persons involved in sales and service. Overseas computer operations moved into the black in 1968, and the company's domestic operations have been profitable since 1966.

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Contact — Gus Constantine @
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Gal President

(Continued from Page 25)

plug for the time-share industry, "Over expansion and faulty financing may cause a rapid fall-out of companies, but the industry is just starting. We haven't even begun to find all the users for time-sharing."

"Keeping independent as we did," adds Mrs. Babcock, "we were able to take chances all the way through. With investors you lose part of your company. And it worked. Never at any time have we issued a statement that was in the red."

The money gained through the private placement with Kuhn, Loeb & Co. will be used for expansion of lines and services.

They now have centers in Palo Alto, Calif., Los Angeles, and New Jersey with multiplexed lines connecting more distant areas. "We are going to network computers," promises Babcock, "No one has really done it, yet. But we are going to."

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TOPAS COMPUTER CORP.**41 E. 42nd St., N.Y., N.Y. 10017****(212) 867-0664****Orders and Installations**

Stuckey Stores, Eastman, Ga., a firm that manufactures and distributes pecan candy, has purchased a Burroughs B2500 for retail accounting functions such as accounts payable, general ledger, balance sheet, and management reports operations. The system, which includes a central processor, a three-station magnetic tape cluster unit, a disk file memory unit, line printer, and card reader, is valued at almost \$340,000.

Medelco, Inc., Wood Dale, Ill., has received three orders for their total hospital information system (This). St. Joseph's Hospital, Bangor, Maine; St. Clare's Hospital, Denville, N.J.; and Desert Hospital, Palm Springs, Calif., are awaiting installation of the data acquisition and communication system from the wholly owned subsidiary of the Scam Instrument Corp.

Sperry Rand Corp., Philadelphia, has received four orders and has made four installations in its Univac 9000 series.

A 9200 DCS-1 has been installed at Industrial Information Inc., Fort Washington, Pa., a company offering management information system services. The Institute of Technology, Tren-

ton, N.J., has received a 9200 to provide practical experience to students taking operator and programmer courses.

Vemco Products, Inc., a Detroit manufacturer of automatic overhead garage door openers, installed a 9200 for payroll processing, inventory control, and general accounting procedures. International Factors, Ltd. will use its Univac 9300 system at its new computer center in company headquarters in Brighton, England.

Honeywell has delivered a \$1.3-million 8200 to the Australian Department of Defense computer center, Canberra, Australia. The 8200, replacing a Honeywell 800, will provide for more advanced EDP research and development.

The Swedish Broadcasting Corp., Stockholm, has purchased a CDC 3300 to handle electric power distribution to railroads, industrial firms, municipal utilities, and retail distributing associations and a 3500 to plan and design new power stations, determine transmission routes, monitor line loading and stabilizing, develop reactor programming, and use for general administrative functions.

Scan-Data Corp. has delivered a model 300 optical character recognition unit to Computer Resources, Inc., a data processing center serving the greater Toronto, Ontario, area.

The Electronic Computer Programming Institute of Dallas, Inc. has ordered a Univac 9200. Mount Carmel Mercy Hospital, Detroit, has placed an order for the 9400 to service hospitals and schools in the Midwest.

The 9300 mode was ordered by Cornelius Printing Co., Indianapolis, Ind., for use in subscription and mailing list preparation and for general accounting functions. Also ordering the 9300 is Svenska Renault AB for its facility in Halsingborg, in southern Sweden.

American Telephone & Telegraph Corp. has received a Computer Consoles data entry system for use in its long lines department for a trial period in the preparation of service orders. The CCI system is compatible with the overall AT&T data communications facility.

Telefon AB L.M. Ericsson of Sweden has ordered £1 million of equipment from International Computers Ltd., London. The 1904A system will be delivered in February, 1970, to be enhanced by a 1906A within two years. The new system will work together with L.M. Ericsson's existing ICL 1907 and Orion machines.

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Unit Record Outlook

MAI Equipment Seeks Ever Larger Share

NEW YORK - MAI Equipment Corp., a wholly owned subsidiary of Management Assistance Inc., says it has launched an aggressive marketing program to capture an even larger share of the unit record market through new, low-cost, long-term, lease plans and outright sales.

"IBM accounts for some 30,000 out of an estimated 45,000 unit record installation sites, taking in an estimated \$500 million each year in rentals and sales," explained Luther A. Schwalm, MAI president and chief executive officer. "We are going after that huge market: MAI has equipment available to supply these users and an extensive service force to provide maintenance."

To date, MAI has supplied some 6,000 installation sites, either all or in part, with leased or purchased equipment, producing revenues of over \$50 million in 1968.

MAI's big weapons include two new lease plans and revised pricing schedules for outright purchases of unit record equipment.

Schwalm explained the rationale behind the new MAI prices in this way: "Despite the predictions that unit record equipment would be replaced by more advanced input equipment, punch card machines continue to be the workhorse piece of equipment in thousands of efficiently run data processing operations and will play that role for the foreseeable future. Thus, it seemed logical to us that long-term lease plans and even outright purchases, if the prices were right, would prove very attractive to unit record equipment users."

Two New Plans

The two MAI lease plans involve a reduction on MAI prices for tabulators and calculators, which the company says are already 7% to 17% below present IBM prices.

One plan is an annual renewal lease.

First-year savings amount to between 4% and 14% on current MAI lease prices, according to the company. For each year's renewal, MAI reduces the price an additional 3%, up to the fifth year. Thereafter the user may continue at the fifth-year rate.

The other lease plan, a non-cancellable lease for three, four, or five years, gives an MAI customer immediate price reduction equal to those earned in the third, fourth, and fifth years of the annual renewal plan.

MAI has also revised its pricing schedule for outright purchases by new customers, as well as by customers presently leasing MAI equipment.

Prices on accounting machines and calculators have been reduced between 20% and 60%, and prices on reproducers have been reduced as much as 10%.

Prices on other punch card equipment either have remained the same or have been increased.

MAI has also taken steps to revitalize its marketing efforts. "No matter how large a market exists for this equipment, and we estimate it at \$500 million, it

takes a strong, efficient marketing organization to exploit it, even more so today since the user base is expanding and changing in character," Schwalm said.

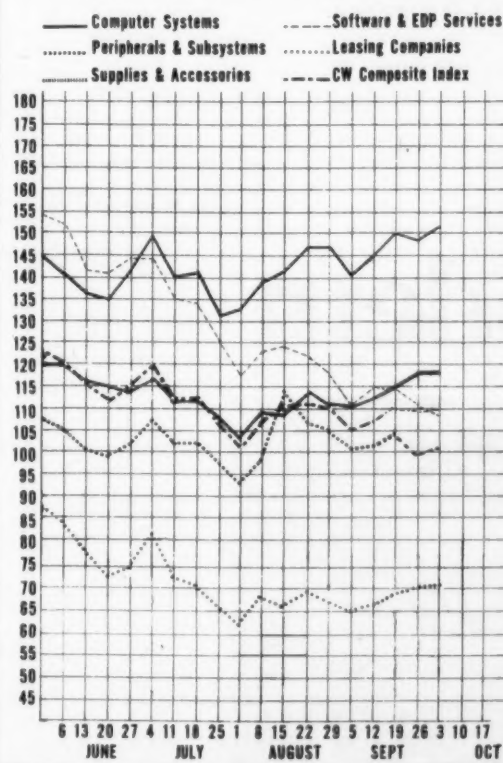
"This past June we created the new corporate position of group vice-president, field operations, and brought in Myron A. Angier, who has been involved for some 24 years in computer marketing and related executive positions with Honeywell, Inc., Remington Rand, and the Univac Division of Sperry Rand Corp., and we have appointed Robert Greiff vice-president of marketing. He comes to us from Electronic Associates with 14

years of marketing experience, including market research, advertising, and sales training," Schwalm said.

The company also has appointed a marketing manager at its headquarters to coordinate all unit record promotion programs.

MAI's national force of unit record salesmen has been strengthened by assigning certain salesmen in each district to specialize in selling unit record equipment purchase and lease plans. Other salesmen will specialize in the company's line of peripherals. Only a small number of salesmen will continue to sell both unit record and peripheral equipment.

Computer Stocks Trading Index



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N	167-128	158 1/2	BURROUGHS CORP.	+	3 1/2	2.26
N	69-38	46 1/2	COLLINS RADIO	-	1 1/2	-3.13
N	159-125	143 1/4	CONTROL DATA CORP.	+	4 3/4	3.43
A	85-54	82 1/2	DIGITAL EQUIPMENT	+	5 1/8	6.62
N	25-13	16 1/2	ELECTRONIC ASSOC.	-	1/4	-1.49
N	98-81	86 1/8	GENERAL ELECTRIC	+	5/8	.73
N	99-75	98 1/8	HEWLETT-PACKARD CO.	+	2	2.08
N	144-107	140	HONEYWELL INC.	+	3	2.19
N	368-291	344 3/4	IBM	-	1 3/4	-.51
N	149-108	141 5/8	NCR	+	2 5/8	1.89
N	48-35	42 1/8	RCA	+	7/8	2.12
N	50-30	39 1/2	RAYTHEON CO.	+	3/4	1.94
O	43-24	27	SCI. CONTROL CORP.	-	2	-6.98
N	55-38	43 3/8	SPERRY RAND	-	1	-2.25
A	42-26	48 3/4	SYSTEMS ENG. LABS.	+	3/4	1.87

PERIPHERALS & SUBSYSTEMS					WEEK NET CHANGE	WEEK % CHANGE
EXCH	1969 RANGE	CLOSING PRICE				
N	82-59	78 7/8	ADDRESSOGRAPH-MULT.	-	1/4	-.32
O	71-13	16 3/4	ALPHANUMERIC	+	3 3/4	28.85
N	47-32	45 3/8	AMPEX CORP.	+	1/8	.28
O	19-9	12 3/4	BOLTER-BERANEX & NEW	+	1/2	4.08
N	17-9	11 5/8	BUNKER-RAND	+	5/8	5.68
A	37-18	25 1/4	CALCOMP	+	1 1/8	6.32
O	38-14	16 1/4	COGNITRONICS	-	1	-5.88
A	13-7	7 7/8	COMPUTER EQUIPMENT	-	1/4	-3.09
A	27-12	15 3/8	DATA PRODUCTS CORP.	+	1/8	.82
O	22-13	14 1/2	DIGITRONICS	+	1/4	1.11
N	72-43	70	ELECTRONIC MEMORIES*	+	4 1/2	6.87
O	18-7	7 1/8	FABRI-TEX	-	1/2	-6.56
O	37-15	16 1/4	FARRINGTON MFG.	-	5/8	-3.78
O	21-10	13	INFORMATION DIS.	-	1	-7.14
A	34-17	30 7/8	MILGO ELECTRONICS	+	1 3/8	4.66
A	89-59	73	MOHAWK DATA SCI.	+	2 1/2	3.55
O	118-42	45	OPTICAL SCANNING	-	2	-4.26
O	31-18	21 3/4	PHOTON	+	3/8	1.75
A	38-23	36 1/2	POTTER INSTRUMENT	+	2 3/4	8.15
O	76-54	56 1/2	RECOGNITION EQUIP.	+	1	1.88
N	61-22	28 3/8	SANDERS ASSOCIATES	+	1 5/8	6.87
O	85-38	38	SCAN DATA	---	---	---
O	36-16	21	TALLY CORP.	+	2	10.53
N	104-85	97 1/2	XEROX CORP.	-	4 1/2	-4.41

SUPPLIES & ACCESSORIES					WEEK NET CHANGE	WEEK % CHANGE
EXCH	1969 RANGE	CLOSING PRICE				
O	47-31	34 1/2	ACME VISIBLE	+	1/4	.73
N	22-11	12 3/4	ADAMS-MILLIS CORP.	-	1/2	-3.77
O	27-23	25 1/2	BALTIMORE BUS FORM	+	1/4	.99
A	29-17	23 1/2	BARRY WRIGHT	+	1/4	1.08
O	44-26	38 1/2	DATA DOCUMENTS	+	2	7.02
N	42-28	35 3/4	ENNIS BUS. FORMS	-	1 1/4	-3.38
N	104-65	97	MEMOREX	+	2 3/4	2.92
N	114-94	111 3/8	3M COMPANY	+	7/8	.79
O	37-29	34 1/4	MOORE BUS FORMS	-	3/4	-2.14
N	47-36	44 3/8	NASHUA CORP.	-	3/4	-1.66
O	48-38	40 1/4	REYNOLDS & REYNOLD	+	1/2	1.26
O	31-23	24 3/4	STANDARD REGISTER	+	1/4	1.02
N	36-25	28 1/2	UARCO	-	3/4	-2.56
A	20-10	12 1/2	WABASH MAGNETICS	+	1/2	4.17
O	34-28	32	WALLACE BUS FORMS	-	1/2	-1.54

SOFTWARE & EDP SERVICES					WEEK NET CHANGE	WEEK % CHANGE
EXCH	1969 RANGE	CLOSING PRICE				
O	14-5	5	ADVANCED COMP TECH	-	1/4	-4.76
A	32-19	19 3/4	APPLIED DATA RES.	-	1 1/4	-5.95
O	19-6	7 5/8	ARIES	+	1/8	1.67
A	89-63	87 1/2	AUTOMATIC DATA PROC.	+	3	3.55
O	13-7	10 1/4	AUTO SCIENCES	+	1/2	5.13
O	17-7	7	BRANDON APPL. SYS.	-	1/2	-6.67
A	21-9	10 1/8	COMPUTER APPL.	-	1/4	-2.41
O	16-6	9 1/4	COMPUTER ENVIRON.	-	1/4	-2.63
O	47-15	17	COMPUTER NETWORK	---	---	---
N	30-19	23	COMPUTER SCIENCES	+	1/2	2.22
O	48-8	11 1/4	COMPUTER USAGE	-	3/4	-6.25
A	59-37	55 1/2	COMPUTING & SOFT	+	1	1.83
O	24-4	4 3/4	DATAMATION SERVICE	-	1/2	-9.52
O	17-6	7	DATATAB	-	1/4	-3.45
O	15-4	4 3/4	DIGITEX	-	1/2	-9.52
A	38-9	11 1/8	ELECT. COMP. PROC.	-	3/8	-3.26
O	30-14	14 7/8	INFORMATICS	-	2 1/8	-12.79
O	19-1	3 1/2	MATRIX CORP.	+	1 1/2	75.00
O	22-5	5	NAT. COMP. ANALYSTS	---	---	---
A	38-23	36 3/4	PLANNING RESEARCH	+	1 1/8	3.16
O	11-5	5	PROGRAMMING & SYS.	---	---	---
O	10-5	6	SOFTWARE SYSTEMS	+	1/4	4.35
O	37-3	3 1/4	STRATEGIC SYS.	-	1/4	-7.14
O	36-11	18 1/2	TBS COMP. CENT. INC.	-	3	-13.95
O	12-3	3 7/8	UNITED DATA CENTER	---	---	---
N	155-56	66 1/4	UNIVERSITY COMP.	-	2 3/4	-3.99
O	38-22	28 3/4	URS SYSTEMS	-	1/2	-1.71
O	16-7	8 1/4	U.S. TIME-SHARING	-	1/4	-2.94

LEASING COMPANIES					WEEK NET CHANGE	WEEK % CHANGE
EXCH	1969 RANGE	CLOSING PRICE				
O	14-8	11 1/8	BANISTER CONTIN.	-	1/8	-1.11
O	45-24	25	BOOTHE COMPUTER	-	3 1/2	-18.28
O	18-4	7	COMPUTER EXCHANGE	-	1	-12.50
A	34-10	11 7/8	COMPUTER LEASING	-	1/8	-1.04
O	12-7	11 3/4	CYBER-TRONICS	-	1/4	-2.08
A	68-23	32 7/8	DATA PROC. F & G	+	1 7/8	6.05
O	16-5	5	DATRONIC RENTAL	-	1/4	-4.76
A	52-24	28 5/8	DEARBORN COMPUTER	+	2 3/8	9.05
A	12-8	9 7/8	DPA, INC.	+	1/8	-1.25
A	45-16	24 1/8	GRANITE MGT.	+	1/8	.52
A	28-12	12 7/8	GREYHOUND COMPUTER	+	1/8	.98
N	54-22	25 1/4	LEASCO DATA PROC.	+	3/4	3.06
O	9-4	4 3/8	LECTRO COMP. LEAS.	-	1/8	-2.78
A	57-23	24	LEVIN-TOWNSEND CMP.	-	1 3/8	-5.02
O	8-3	3 1/2	LHC DATA, INC.	-	3/4	-17.65
O	14-2	3 7/8	MANAGEMENT ASSIST.	+	1/2	17.69
A	12-6	8 1/4	NCC LEASING	+	1/4	3.13
A	43-18	38	RANDOLPH COMPUTER	+	7/8	2.34
O	34-5	5 1/4	SYSTEM CAPITAL	-	1/2	-8.78
A	28-13	14 3/8	U.S. LEASING	-	1 3/8	-8.73

New Registrations

LOGI-CALL SYSTEMS, INC., 151 University Ave., Palo Alto, Calif., a company that proposes to provide time-sharing services to remote users, filed to register 75,000 shares of common stock. Proceeds, at \$8 per share, intended for the initial computer and related hardware, for research and development of software and systems hardware, for a sales and marketing campaign, and for hiring personnel. The underwriter is TDA Securities Inc., 70 N. Franklin St., Hempstead, N.Y.

COMPUTER BUSINESS SYSTEMS INTERNATIONAL, INC., 15 W. 34th St., New York, N.Y., a company engaged in computerized programs for the collection of delinquent accounts receivable, filed to register \$500,000 of convertible subordinated debentures, 100,000 shares of common stock, and 20,000 common stock purchase warrants. Proceeds intended for leasing a digital computer and peripheral equipment, and for development, advertising, and marketing expenses. The underwriter is Charter Securities Co. Ltd., 55 Liberty St., New York, N.Y.

CONTROLAMATION, INC., 157 Rome St., Farmingdale, N.Y. 11735, a company that proposes to conduct laboratory and development work and to fabricate and sell a product line of compact, portable devices designed to capture machine-readable data at the source from office business machines on magnetic tape, filed to register 99,000 shares of common stock. Proceeds, at \$5 per share, intended to purchase laboratory equipment and tools for development, for research and development, for administrative expenses, and for advertising. The underwriter is R.A. Wolk & Co., Inc., 405 Lexington Ave., New York, N.Y. 10017.

ENGLISH DATA CORP., 40 Exchange Place, New York, N.Y. 10005, a company that proposes to engage in the design, development, and operation of computerized systems for broker/dealer securities firms, filed to register 125,000 shares of common stock. Proceeds, at \$4 per share, intended for research and development, for advertising and promotion, and for lease or purchase of data processing equipment. No underwriter is involved.

ICCC Plans to Offer Services in Mexico

DALLAS — Information and Computing Centers Corp. of Dallas has entered the computer services market in Mexico with the establishment of Information and Computing Centers Corporation de Mexico, S.A.

The new corporation will be headquartered in Mexico City and will offer advanced computer services to customers in Mexico. In addition, a company spokesman said, the Mexico base of the corporation will offer ICCC a natural bridge for its computer network into the whole of Latin America and South America. The Mexican corporation will establish a central data center in Mexico City along with a network of terminals that will be tied in with the present ICCC communication network. It will also pro-

Expansions

vide a service bureau operation in which customers buy only the computer time needed for specific applications on a time-sharing basis.

In addition, software services, including information technology, computer systems analysis, and design, will be offered.

Control Data To Build Computer Plant in Tucson

TUCSON, Ariz. — Control Data Corp. will build a 160,000-sq-ft computer terminal products manufacturing plant on a corner of a recently acquired 535-acre site on the outskirts of Tucson.

Initially, the plant will manu-

facture digital display products classified as terminal devices that are linked to computers. Through such devices, information can be entered into the computer via a standard keyboard, or information stored in the computer may be retrieved for readout on the display's TV-like screen.

The new plant will include a wide range of operating functions, such as manufacturing, personnel, accounting, purchasing, manufacturing engineering, and quality assurance. Future plans call for adding development engineering, product management, and related support functions to the plant.

Sanders Establishes European Headquarters

NASHUA, N.H. — Sanders Associates, Inc. has announced plans to expand its international operations with the establishment of a European headquarters in Brussels, Belgium. The company now has licensing agreements with firms in the United Kingdom and on the Continent.

Sanders Associates is an electronics systems company, with the military/aerospace and electronic data-handling markets as its principal activity areas. It develops and manufactures advanced and original systems in such areas of technology as oceanography, electronic warfare, electro-optics, lasers and radiation, long-range communications, precision products, and electronic data handling.

Other Expansions

Information Systems Co. of Los Angeles has opened a Detroit regional office that will provide a base for expansion of the company's computer and information systems services throughout the midwestern states.

Intercomp of Cambridge, Mass., which designs and manufactures computer systems and peripheral equipment, has moved into a recently completed manufacturing complex constructed for its specific needs at 243 Vassar St.

Rixon Electronics, Inc. of Silver Spring, Md., has established a system development laboratory on Republic Road, N. Billerica, Mass. The new facility will be concerned with the development of systems concepts and hardware configurations involving concentrators and controllers for data processing networks.

Varian has formed a graphics and data systems division in Palo Alto, Calif. The new division will encompass activities of the former electrographics division and the data systems activity.

Communications Satellite Corp.'s research and development center, Comsat Laboratories, has opened new quarters near Clarksburg, Montgomery County, Md.

Data Information Services, Inc., which offers data processing and systems services including consulting, programming, personnel recruitment, and a computer training school, has moved to new quarters at 211 E. 43rd St., New York, N.Y.

New Data Modem

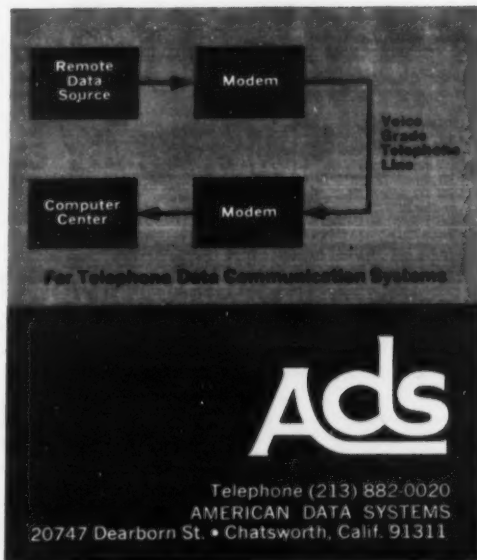
AUTOMATIC EQUALIZATION. The ADS-448 modulator-demodulator automatically equalizes your data source to the telephone line. No manual adjustments.

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Thomas A. Spain Promoted to IBM's New Job of Director of Industry Relations

ARMONK, N.Y. — Thomas A. Spain has been promoted to the newly created position of IBM director of industry relations.

Spain had been director of leasing company relations for IBM's data processing division.

In his new position, he will report to IBM Vice-President James W. Birkenstock and will concentrate on the company's relations with the more than

4,000 firms in this country and many others abroad that compete with IBM in the information-handling industry.

Spain and his staff will work with the responsible industry relations functions in IBM's divisions and subsidiaries to maintain the necessary liaison with the management of the competing companies.

Spain, a graduate of Mississippi

State University, joined IBM in 1949 as a sales representative in Baton Rouge, La. He subsequently served in several sales and management positions, including branch manager and district manager.

In 1964, he was promoted to industry manager, state and local government for the data processing division, and to industry director, state and local government, in 1966.



COMPUTERWORLD

EDPeople

Bennett to Run Ampex's Computer Products Group

CULVER CITY, Calif. — Max P. Bennett has been named operations manager for the com-

puter products division of Ampex Corp.

In his new position Bennett is responsible for all manufacturing and quality control of the division, an independent supplier of magnetic tape drives, core memories, and memory components.

He replaces Charles V. Andersen, recently named vice-president-general manager of the Europe, Asia, and Middle East area of Ampex International.

Bennett joined Ampex in 1962 as a quality control engineer and has held various management positions in the quality control, manufacturing engineering, and production operations of the computer products division.

Prior to his present appointment, he was production manager, tape and memory products.

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Phone: 715-526-6121

W. Benz Replaces Yaconelli as President of Caelus

HAWTHORNE, Calif. — Trude C. Taylor, chairman of the board of Electronic Memories & Magnetics Corp. has announced the appointments of William Benz as president and Robert Carroll as secretary/treasurer of Caelus Memories, Inc., a wholly owned subsidiary of Electronic Memories & Magnetics.

Benz replaces Philippe Yaconelli, former president, and Carroll replaces William Floyd, former secretary/treasurer.

Yaconelli will remain on the board of directors of Caelus.

Prior to being named president, Benz was vice-president-general manager and a director of Caelus Memories. Carroll was formerly controller.

Maremont Appointed V.P. At Brandon Systems

NEW YORK — Michael D. Maremont has been appointed vice-president of Brandon Applied Systems, Inc. Maremont is president of Ehlers, Maremont and Co., Inc. of Chicago, Ill., a Brandon subsidiary.

He was formerly a vice-president of Allied Paper Corp. He holds several directorships and is a member of the American Statistical Association and the American Society for Public Administration.

Brandon Applied Systems, Inc. is an international management and technical consulting firm specializing in data processing and information sciences, EDP education and training, programming and proprietary software, and publishing and printing.

Charles W. Libby has been named consultant to the information processing system technical staff at Raytheon Co.'s corporate headquarters in Lexington, Mass.

Computer Machinery Corp. of Los Angeles has announced the appointment of James Harder as Chicago district manager. Harder will supervise the marketing of the firm's key processing system, a computer-controlled keyboard input system designed to replace keypunches and key-to-tape units, in the Chicago area.

Compucord, Inc., Waltham, Mass., has announced the election of Dr. Francis J. Berlandi to the company's board of directors.

Tom McLaughlin has been appointed to the management resources division of Systemation, Inc., Colorado Springs, Colo. His new position will be manager, project research. His duties will include developing seminars, writing course materials, and conducting seminars.

Joseph V. Popolo has been appointed manager, marketing operations, of Interdata, Oceanport, N.J.

William O. Harden and Robert Colin have been elected to the board of directors of Techniques Corp., New York, N.Y.

AccuRay Leasing Corp., Columbus, Ohio, has promoted Michael J. Thorsen to manager of systems and data processing in the information services division. He will be responsible for the design and implementation of computer programs and services.

Erwin H. Warshawsky has been appointed general manager of System Design Associates, a

Executive Corner

Santa Ana, Calif.-based consulting services and systems engineering firm. He will have complete responsibility for directing company operations and formulating future growth activities.

Computer Utilization, Inc. of Austin, Texas, has named Dr. Robert B. Grant chief executive officer. His new responsibilities will be in addition to his role as president.

Allen J. Berg, assistant data processing supervisor at Maynard Electric Steel Casting Co., Milwaukee, Wis., has been named operations manager of the firm's

data processing service bureau division, Maynard Data Processing.

Honeywell has announced the appointment of M.G. Neale to the position of director of marketing for its computer data products — keytape devices, disk packs, and supplies — with headquarters in San Diego. Neale will supervise all marketing and sales activities.

International Contronics, Inc. of Sunnyvale, Calif., has announced the addition of Donald A. Pritchard, Robert Jerrett Jr., and Peter Crawley to its board of directors.

Eric H. Clamons, chairman of Bema's new standards steering committee, has joined G.E. and will help expand their effort toward improved industrywide integration of hardware and software.

Systems Engineering Laboratories, Inc., Fort Lauderdale, Fla., has announced the appointment of E.S. Gudmundson as vice-president of marketing. Gudmundson will direct the marketing programs of the company's computer systems and related data acquisitions and control equipment at headquarters in Fort Lauderdale and at more than 30 marketing offices in the U.S. and Canada.

Lawrence H. Berul has been named director of marketing and product development for Auerbach Info, Inc., Philadelphia, a subsidiary of the Auerbach Corp.

Computer Output Systems, Inc., Cupertino, Calif., has named Thomas H. Gibson Jr. as vice-president of marketing and Frank A. Fieser as financial vice-president.

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